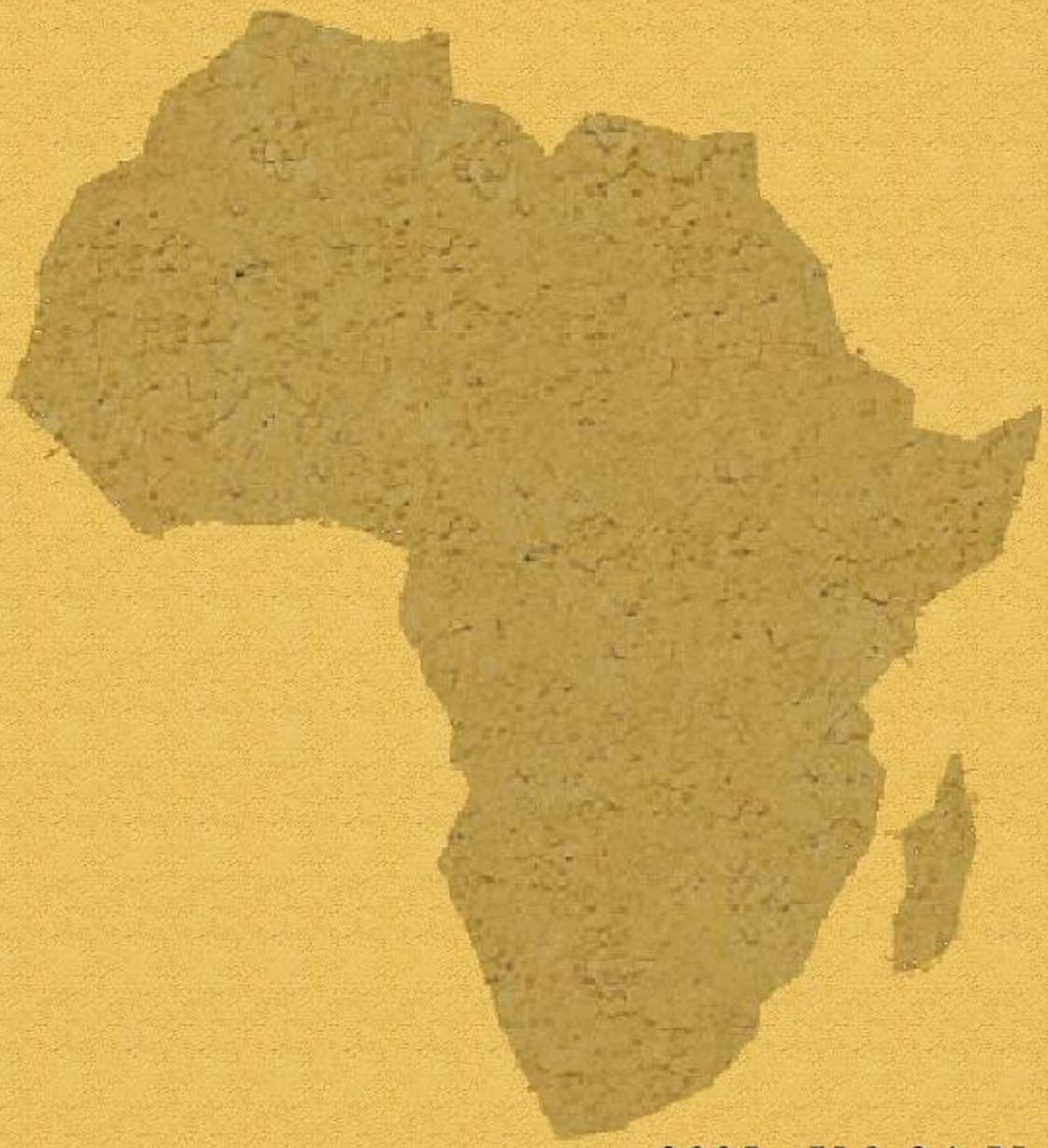
African Journal of Neurological Sciences



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EDITORIAL

ÉTHIQUE DU NORD, ÉTHIQUE DU SUD : RESPONSABILITE DES ELITES AFRICAINES

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Keywords : Afrique, Essais cliniques, Ethique

Un article paru récemment dans le New England Journal of Medecine, « A New Colonialism? — Conducting Clinical Trials in India » dénonce la nouvelle politique adoptée par le gouvernement sur les essais cliniques pratiqués en Inde, ouvrant la porte ouverte à tous les excès (3). Plusieurs voix se sont élevées contre les essais cliniques réalisés par l'industrie pharmaceutique du Nord en direction des populations du Sud en relevant le cynisme des instigateurs. Jusqu'aux années 1990, les pays du Nord conduisaient ces tests sur leurs populations. Actuellement, les contraintes administratives, commerciales et éthiques sont telles que le mouvement de « délocalisations » des essais croît de manière exponentielle. Un quart des tests pharmaceutiques est effectué dans le Tiers Monde et le mouvement s'accélère. Le « Washington Post » décrit « une chasse au corps humain » Quel scandale ! Les pauvres sont de nouveau abusés par les riches !! Mais à bien y réfléchir, la responsabilité n'est-elle pas partagée ? Les pays du Sud qui ont accepté ce type de contrat ne sont-ils pas coupables de légèreté, voire de complicité, avec ces actes potentiellement criminels ?

L'essai d'un traitement préventif contre le sida mené sur des prostituées à Douala (Cameroun) depuis mai 2004 par l'ONG américaine Family Health International (FHI) et les laboratoires Gilead a suscité une polémique légitime. Il s'agissait d'administrer à ces prostituées un comprimé de tenofovir (Viread*) afin de vérifier son éventuelle efficacité dans la prévention contre la contamination par le VIH. La prise en charge thérapeutique de ces femmes, véritables cobayes, contaminées au cours de l'essai n'était pas assurée. Les autorités administratives ont clamé leur bonne foi en avançant qu'« il faut éviter l'amalgame et séparer les questions éthiques des questions humanitaires. » Ce propos incompréhensible et irresponsable laisse pantois !

La même étude est menée actuellement au Ghana (Tema), au Botswana et au Malawi.

Le Cambodge. Un « petit » pays. Pays pauvre parmi les plus pauvres de la planète, saigné par un autogénocide ayant emporté dans des fosses communes un quart de sa population, déchiré de manière permanente par des combats politiques de conquête de pouvoir a dit non à l'étude accepté par des pays africains. Comment expliquer que le Cameroun, le Ghana, le Botswana, le Malawi aient cédé avec une telle facilité ? Le label de la Fondation de Bill et Melinda Gates y est peut-être pour quelque chose. Le choix d'une économie libérale débridée, dite de « marché » sans entrave socio-politique promue par l'Ecole de Chicago et dénoncée avec justesse par le prix Nobel d'économie, J. STIGLITZ (5) peut expliquer le choix de l'Inde et il en sera de même pour l'Afrique car la recette de la « libéralisation » économique est imposée comme étant la panacée.

L'exemple du Cambodge balaie l'argument financier. Le manque d'information, de formation du monde médical africain a très vraisemblablement contribué à la mise en place de cet essai. Mais il y a également le manque de confiance en soi, lié à la récurrente problématique identitaire africaine qui mène de facto à une capitulation. Il y a certes une responsabilité des gouvernements africains, mais la responsabilité de l'élite africaine scientifique ne peut être exclue. Comment expliquer que sur près de 260 « travaux de recherche», selon un chercheur membre du Comité d'éthique du Cameroun, 60 % de ces tests sont « pirates » !! (4) Défaut de vigilance ? Manque de courage ? Corruption ? Inhibition identitaire ? Un peu de tout cela.

JP CHIPPAUX, chercheur à l'Institut de Recherche pour le Développement (IRD) dans son ouvrage « La pratique des essais cliniques en Afrique » définis ainsi les critères éthiques de la recherche clinique (2) :

- valeur sociale ou scientifique (mesure de l'efficacité d'une intervention) ;
- validité scientifique ;
- sélection des sujets (avec choix de population pertinent et une protection des populations vulnérables ou exploitables) ;

- rapports risque/ bénéfique favorable ;
- évaluation indépendante (et notamment évaluation des conflits d'intérêts) ;
- consentement informé ;
- respect des sujets (avec possibilité de retrait à tout moment sans pénalité, confidentialité des informations, sécurité des sujets, communication des résultats aux participants).

L'explosion de la société traditionnelle africaine, bâtie autour d'une hiérarchie coutumière mêlant à la fois communautarisme et gérontocratie, fait les frais de l'inéluctable intrusion par effraction de la modernité en s'offrant comme un ventre mou. Le positionnement dans une société se construisant avec célérité, redistribue dans le désordre les rôles, sur une base mercantile dont on connaît la labilité et l'opportunisme. Les moyens pour accéder en haut de l'échelle sociale ne répondent à aucune règle éthique. La fin ne justifie pas les moyens. Il faut s'approprier des biens matériels de manière gloutonne. Le lucre étant élu roi. Les acteurs du ballet macabre autour d'une population agonisante sont certes les politiciens à courte vue, guidées « par le ventre » bien décrit par le politologue avisé, JF BAYART (1). Mais l'exemple des essais thérapeutiques dévoile d'autres corps sociaux comme acteurs. En particulier, les élites qui démissionnent.

La responsabilité de l'élite est d'être en permanence en éveil, de scruter autant l'horizon que le pas-de-porte afin de déceler, d'alerter, de dénoncer les potentiels dangers qui peuvent ébranler la Cité surtout lorsque cette responsabilité concerne le domaine médical.

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5. STIGLITZ J La grande désillusion, Ed. Fayard, Paris, 2002, 326 pages

EDITORIAL

ETHICS IN THE NORTH AND IN THE SOUTH : THE AFRICAN ELITES SHOULD NOT BE SILENT

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Keywords : Africa, Clinical trials, Ethics

A recent article in the New England Journal of Medecine, entitled “A new Colonialism ? Conducting Clinical Trials in India” (3) denounces a new government policy there that amounts to opening the door to various abuses in clinical trials. Criticism from a number of quarters has been voiced against some clinical tests conducted by Western pharmaceutical companies in countries of the developing world. Up to the 1990s, such trials were performed in the developed world, on people drawn from their population. Today, however, about a quarter of such research is conducted in the third world, and the trend is accelerating. The Washington Post even speaks of a “human body hunt”. Scandalous, isn’t it ? Looks like “another instance of the poor being abused by the rich”! Thinking further, however, isn’t responsibility shared for this state of affairs ? Are not the countries in the South who have signed such research agreements guilty of failing to exercise due caution or even of complicity in actions that potentially violate the laws ?

Under a project to develop a preventive treatment for AIDS, an NGO, Family Health International (FHI) and Gilead Laboratories have been conducting tests on prostitutes in Douala, Cameroon. Both organizations are accused of using these women as “guinea-pigs”, and disregarding their rights, and the project has given rise to legitimate controversy. The prostitutes were given a tablet of tenofovir (Viread*) to test its possible effectiveness in preventing contamination by the HIV. No medical treatment was given to those of the women who were already infected with AIDS. Local administrative officials have proclaimed their good faith in the matter, arguing “the need to distinguish and avoid mixing up ethical and humanitarian aspects” (4). Properly speaking, such an incomprehensible and irresponsible position is dumbfounding !

The same study is currently conducted in Ghana (Tema), in Botswana, and in Malawi.

Cambodia is a small country ; a poor country among the poorest in the world, bled to its knees by a domestic genocide in which a quarter of the population was herded off to mass graves ; a country still torn apart by political battling over power, but it said “no” to this operation which some African countries have agreed to establish. How can we explain that Cameroon, Ghana, Botswana and Malawi have agreed so easily to this operation ? Did the prestige and label of the Bill and Melinda Gates Foundation facilitate acceptance ? The Indian decision may be related to India’s adoption of an unbridled so-called “market” economy free of social and political controls, a version of “economic liberalism” propounded by the Chicago School of economics whose flaws have been pointed out by the Nobel prize-winner in economic science J. Stiglitz (5) ; it appears that the same recipe, perceived as a cure-all, is being applied in Africa.

However, the example set by Cambodia sweeps away the underlying financial-cum-economic arguments. Lack of information, the shortage of technical capabilities among African medical practitioners are very likely to have been contributing factors to the establishment of such a research station and especially acceptance of its mode of operation. Given the persistent identity problems in Africa, a lack of self-confidence may also be considered as a possible cause. African governments, no doubt, are partly to blame, but the responsibility of the African scientific elite cannot be swept under the carpet either. How are we to explain, otherwise, that 60 % of 260 “research papers”, according to a researcher who is a member of the Ethics Committee of Cameroon, are “pirates” (unauthorized) ?? (4) Is this due to lack of precautions, to corruption or to social inhibitions ?

JP Chippaux, a researcher at Institut de Recherche pour le Développement (IRD), is the author of « The Practice of Clinical Trials in Africa », a book (2) in which he defines, as follows, a number of ethical criteria for conducting clinical research :

- Social or scientific value (a measure of operational efficiency);
- scientific validity;
- selection of research subjects (including a pertinent choice of sample population and the protection of vulnerable or exploitable groups);

- a good risk-to-benefit ratio;
- independent evaluations (including an evaluation of possible conflicts of interest)
- respect for the research subjects (right to withdraw from the research at any time without incurring penalties—ensuring the confidentiality of data—subject security—communication of results to participants).

African traditional societies, based on a customary hierarchical system of communal kinship and government or guidance by elders has imploded as a result of the unavoidable and forcible intrusion of the modern world. The traditional fabric of society can no longer be a backbone for resistance. In this context, as societies are speedily being transformed, roles are redistributed in a disorderly fashion and on a commercial, even mercantile, basis, which is by nature unstable and opportunistic. The means used to get to the top of the social ladder ignore ethical rules. Money, even filthy money, is dominant. The participants in the macabre dance around dying people are no doubt short-sighted politicians, guided by what a political analyst, JF Bayart (1), has perceptively called their "stomach". But they are not alone. For cases such as medical trials show other participants and social groups. Among these the elite, made up of scientific and other leaders who, too often, have given up the fight. Let us remind ourselves that the end, however worthy, does not justify the means.

The responsibility of members of the scientific and intellectual elite is to remain constantly attentive, looking not only into the distance but also at their doorstep to detect, alert, point out the potential dangers facing the larger Community. This is especially necessary in the field of medicine.

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ARTICLE ORIGINAL / ORIGINAL PAPERS

ETUDE DESCRIPTIVE DES COMPLICATIONS DU PIED DIABETIQUE LORS DE NEUROPATHIES PERIPHERIQUES SYMPTOMATIQUES

A DESCRIPTIVE STUDY OF FOOT COMPLICATIONS IN DIABETIC PATIENTS WITH SYMPTOMATIC PERIPHERAL NEUROPATHY

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Keywords : Diabetes mellitus, foot complications, peripheral neuropathy, Afrique, diabete, complications, neuropathie peripherique, pied diabetique

ABSTRACT

Background
Symptomatic peripheral neuropathy in a diabetic patient may be associated with the presence of other foot complications, which may otherwise be overlooked.

Objective
We conducted this study to determine the prevalence of symptomatic peripheral neuropathy among diabetic patients attending the diabetes outpatient clinic of our hospital as well as document the presence of other foot complications/problems in patients with symptomatic peripheral neuropathy.

Methods
A cross-sectional survey of foot complications was conducted over a 6-month period in diabetic patients symptomatic for peripheral neuropathy and compared with age/sex matched diabetics without peripheral neuropathy and apparently healthy individuals.

Results
Of 322 diabetic patients studied, 64(19%) had symptomatic peripheral neuropathy. The most frequent symptoms of peripheral neuropathy were numbness or tingling sensation in (65.6%), cramps, aches and fatigue (14.1%) respectively, and burning sensation (10.9%). Dry skin, hyperpigmentation, corns and callosities, cracked skinIssue
and fungal infections were the most frequent lesions seen in diabetic patients symptomatic for peripheral neuropathy. These lesions occurred more frequently in them than in patients without neuropathy and healthy subjects. While (34.7%) symptomatic patients had foot ulcers, none was recorded in the asymptomatic or healthy population.

Conclusion
Foot complications other than foot ulcers may occur in diabetic patients with symptomatic peripheral neuropathy. Awareness of these skin and foot lesions and their sequelae with prompt initiation of measures to limit disability may prevent limb losses/foot deformities and should be emphasised. Proper education on foot care and frequent limb inspection can never be over emphasised. Moreover, these foot lesions may also serve as markers for the presence as well as severity of peripheral neuropathy.

RESUME

Introduction
Les neuropathies diabétiques symptomatiques s'accompagnent de complications au niveau des pieds qui risquent d'être négligées.

But
Le but de l'étude est de déterminer la prévalence des neuropathies périphériques ainsi que les complications au niveau des pieds chez des diabétiques suivis dans notre département, en ambulatoire.

Méthode
Une étude transversale a été menée pendant six mois chez des diabétiques atteints d'une neuropathie périphérique symptomatique et des individus apparemment sains.

Résultats
Sur les 322 patients étudiés, 64 (19%) présentaient une neuropathie périphérique symptomatique. Les symptômes les plus souvent rencontrés sont : les engourdissements ou picotements (65,6%), les crampes, des douleurs continues, une fatigabilité (14,1%) et une impression de brûlure (10,9%). Une peau sèche et craquelée, une hyperpigmentation, des callosities ainsi que des signes de mycoses étaient les lésions les plus souvent observées chez les patients diabétiques ayant une neuropathie périphérique. Aucun ulcère n'a été noté chez les individus sains contrairement à la population diabétique (34,7%).

Conclusion
L'attention est portée sur la nécessité de surveiller et de diagnostiquer au plus tôt les lésions cutanées chez les patients diabétiques. Par ailleurs, les lésions cutanées sont l'expression de la sévérité de la neuropathie périphérique sous–jacente, chez ce type de patients.

INTRODUCTION

Peripheral neuropathy, which commonly manifests as loss of sensation in the feet is an important factor in the pathogenesis of foot ulcers. There is a complex inter play between this abnormality and a number of other contributing factors such as peripheral vascular disease, altered foot pressure, limited joint mobility, glycaemic control, ethnicity and cardiovascular parameters.(1,13,15) Some published data suggest that in addition to foot ulcers, some other foot lesions may be associated with the presence of peripheral neuropathy in diabetics .(6,13)

We have therefore conducted this study to determine the prevalence of symptomatic peripheral neuropathy among diabetic patients attending the diabetes outpatient clinic of the Obafemi Awolowo University Teaching Hospital Complex (OAUTHC), Ile-Ife, Nigeria as well as document the presence of other foot complications/problems in patients with symptomatic peripheral neuropathy.

METHODS

All patients who attended the diabetes clinic of the OAUTHC, Ile Ife between July and December 2000 were recruited into the study. A comprehensive history was taken from each patient followed by a thorough physical examination. The history included data on demography, type and duration of diabetes, symptoms associated with peripheral neuropathy, use of footwear, alcohol and cigarette use, occupation, and literacy level.

Physical examination included objective evaluation for signs of peripheral neuropathy, peripheral vascular disease, and the presence of other foot lesions/complications. Symptoms and signs of peripheral neuropathy were assessed using the scoring system proposed by Young et al(15) (Appendix). Scores of 3 or more implied the presence of peripheral neuropathy. The presence of other foot lesions were also determined in age-sex matched diabetics who were not symptomatic for peripheral neuropathy as well as apparently healthy controls recruited from hospital staff and members of public. The frequency of such complications was then compared across the three groups. Peripheral vascular disease was defined by an ankle/arm blood

pressure ratio greater than 0.9.
Data are presented as mean (SD) and percentages as appropriate.

RESULTS

During the six-month study period 322 diabetic patients were seen. 64(19%) had symptomatic peripheral neuropathy and are further described (Table 1). There were equal number of males and females, their ages ranged between 36 –80 years, mean 58.1 ± 8.1 years. 56 (87.5%) were non-insulin dependent diabetics, 2(3.1%) were insulin dependent while 6(9.4%) were non-insulin dependent now requiring insulin. The mean duration of disease was 8.41 ± 7.1 years, range 2 to 29 years. The type of out door footwear used by patients varied from covered shoes 8 (12.5%), flat heeled slippers 50 (78.1%), to both slippers and covered shoes 16 (25%). No one walked outdoors without footwear though 10 patients admitted to not using footwear a times when indoor. None of the patients smoked nor took alcohol.

The most frequent symptoms of peripheral neuropathy were numbness or tingling sensation in (65.6%), cramps, aches and fatigue (14.1%) respectively, and burning sensation (10.9%). 27(42.19%) patients had moderate and severe neuropathy symptoms scores respectively, while 8(12.5%) were mild. Neuropathy sign scores were mild in 36 (56.3%) patients; moderate 26(40.6%), and severe in none. 2(3.1%) had no severity score. The commonest signs elicited were impaired vibration sense in 39(60.9%) and loss of ankle reflex in 33 (51.7%). Peripheral vascular disease was present in 3 (4.7%) patients.

Table 2 compares foot lesions seen in patients with and without symptomatic peripheral neuropathy and apparently healthy non-diabetic subjects. Dry skin, hyperpigmentation, corns and callosities, cracked skin and fungal infections were the most frequent lesions seen in diabetic patients symptomatic for peripheral neuropathy. These lesions occurred more frequently in them than in patients without neuropathy and healthy subjects. While 3 (4.7%) symptomatic patients had foot ulcers, none was recorded in the asymptomatic or healthy population.

DISCUSSION

This study assessed foot problems associated with peripheral neuropathy. The prevalence rate of symptomatic peripheral neuropathy was 19%. The commonest symptoms/signs of peripheral neuropathy numbness, cramps and burning sensation in the feet, impaired vibration sense and loss of ankle jerk.
Our PN prevalence rate of 19% is lower than those reported from previous studies.(4-7,9,12) This difference may be accounted for by variations in methodology, diagnostic criteria and intrinsic differences in the study populations. Qualitative sensory tests and/or electrophysiological studies, if employed, may have detected the presence of PN in our apparently asymptomatic patients. Our data, like in previous studies show that numbness, burning feet and posterior column tract signs with a depressed ankle jerk remain the commonest presenting features of peripheral neuropathy. It should be noted however that the severity of some of these features are influenced a great deal by shoe wearing habits. Many rural Nigerians still walk barefoot. Osuntokun(10) had observed attenuation of the plantar response in apparently healthy rural Africans who walk without their shoes on. He had attributed this to the thickening of the soles observed in these individuals as well as possible subclinical malnutrition.

Patients with symptomatic peripheral neuropathy also presented with a myriad of additional foot/skin lesions such as dry skin, callosity, fungal infection, paronychia, hyperpigmentation, yellow nails, cracked skin, ulcers, corns etc. Dry skin, paronychia (both bacteria and candida), corns and hallux valgus were commoner in symptomatic patients than in the asymptomatic or healthy population. Similar foot/skin problems have been previously described among European diabetic patients(2) and in indigenous Tanzanians.(14) All forms of peripheral neuropathy including autonomic, sensory and motor neuropathy each contribute to skin lesions in the diabetic foot. Autonomic neuropathy can be associated with both absence of sweating as well as compensatory over sweating and perspiration in other areas.(8) Dry skin, resulting from absence of sweating, predisposes to puritus a known presenting symptom of diabetes. Dry skin also cracks easily especially when scratched (pruritus) encouraging bacterial invasion and superimposed bacterial infections. Use of emollient in these patients prevents dry skin and itching. Fungal infections are often associated with poor glyceamic control, which is itself a risk factor for peripheral neuropathy.(11) Hyperhydrosis of autonomic neuropathy

make the feet conducive for fungal infections in the diabetic as fungi thrives best in moist areas. Sesori-motor neuropathy, which may result in imbalance of internal musculature and poor standing posture coupled with ill-fitting shoes can cause callosities and neuropathic ulcers.(3)

Foot complications other than foot ulcers may occur in diabetic patients with symptomatic peripheral neuropathy. Awareness of these skin and foot lesions and their sequelae with prompt initiation of measures to limit disability may prevent limb losses/foot deformities and should be emphasised. Proper education on foot care and frequent limb inspection can never be over emphasised. Moreover, these foot lesions may also serve as markers for the presence as well as severity of peripheral neuropathy.

TABLE I: CLINICAL CHARACTERISTICS OF STUDY PATIENTS (mean ± SD)

	SYMPTOMATIC	ASYMPTOMATIC	CONTROLS
No of patients	64	60	25
Sex (Male/Female)	(32/32)	(32/28)	(15/10)
Mean Age (years)	58.1 ± 8.1	56.6 ± 9.8	58.6 ± 7.7
Type of DM (NIDDM/IDDM)	62/2	56/4	NIL
Duration of Diabetes (years)	8.4 ± 7.1	5.3 ± 3.4	NIL
Fasting blood sugar (mmol/l)	10.6 ± 3.3	7.7 ± 3.4	4.2 ± 0.6
2hrsPP (mmol/l)	18.1 ± 5.7	13.0 ± 2.2	6.7 ± 2.4

TABLE II: FREQUENCY OF FOOT LESIONS IN SYMPTOMATIC PATIENTS, ASYMPTOMATIC PATIENTS AND HEALTHY SUBJECTS.

FOOT LESION	SYMPTOMATIC (n = 64)	ASYMPTOMATIC (n = 60)	CONTROLS (n = 25)
Dry skin	48 (75%)	8 (13.3%)	0 (0%)
Callus	8 (12.5%)	4 (6.7%)	2 (8%)
Fungal infection	12 (18.8%)	3 (75%)	2 (8%)
Yellow nail	2 (3.1%)	0 (0%)	0 (0%)
Onycholysis	14 (21.9%)	2 (3.3%)	0 (0)
Hyperpigmentaion	42 (65.6%)	18 (30%)	5 (20%)
Cracked sole skin	12 (18.8%)	4 (6.7%)	2 (8%)
Ulcer	3 (4.7%)	0 (0%)	0 (0%)
Corns	26 (40.6%)	5 (8.3%)	2 (8%)
Hypopigmentation	4 (6.3%)	5 (8.3%)	3 (12%)
Hallux Valgus	8 (12.5%)	1 (1.7%)	0 (0%)
Harmer toe	3 (4.7%)	1 (1.7%)	0 (0%)
Scabies	0 (0%)	0 (0%)	0 (0%)
Bullosis Diabeticorum	2 (3.1%)	0 (0%)	0 (0%)
Eczema	2 (3.1%)	0 (0%)	0 (0%)
Hallux varus	4 (6.3%)	0 (0%)	0 (0%)
Paronychia	4 (6.3%)	1 (1.7%)	2 (8%)
Pes caves	4 (6.3%)	1 (1.7%)	0 (0%)

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APPENDIX

1 - Assessment Of symptoms of P Neuropathy
* Description of symptoms
Fatigue, cramps, or aches (1pt)
Burning, Numbness or Tingling (2pt)
* Site of discomfort
Calf muscles (1pt)
Feet or soles (2pt)
* Time of worst symptoms
Day (0pt)
Night (2pt)
Both Day and Night (1pt)
* Night time insomnia for symptoms
No (0pt)
Yes (1pt)
* Factors that alleviate symptoms
Standing (1pt)
Walking (2pt)

2 - Assessment of signs of P Neuropathy
* Pain, temperature and vibration
If impaired or absent 1pt
* Ankle reflex
If only present with reinforcement 1pt
If absent 2pt

3 - Assessment of peripheral vascular diseases
Peripheral vascular diseases is defined by an ankle / arm blood pressure ratio <0.9 (1 – 1.4 in normal subjects)

COMMENTARY

This neat study is to the best of my knowledge the first large study of this order under African continent. The authors emphasised the importance of adequate foot care to prevent complications in diabetic patients.

Prof A BHIGJEE
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ARTICLE ORIGINAL / ORIGINAL PAPERS

PREVALENCE DE LA MIGRAINE A MADAGASCAR : RESULTATS D'UNE ENQUETE MENEE DANS UNE POPULATION GENERALE

MIGRAINE PREVALENCE IN MALAGASY: RESULTS OF A GENERAL POPULATION SURVEY

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Keywords : Afrique, Epidémiologie, Migraine, Madagascar, Africa, Epidemiology, Migraine, Malagasy

RESUME

Objectif
Les données épidémiologiques sur la migraine, chez les Malgaches, sont rares ou discordantes. D'où l'intérêt de cette enquête de prévalence en population générale.

Méthodes
L'étude a été menée dans le « Grand Antananarivo », du 1er Juin 2001 au 31 Décembre 2001. Ont été incluses, les personnes des deux sexes, âgées de plus de 14 ans, ayant présenté au cours des 12 mois précédant l'enquête, des céphalées récidivantes.

Résultats
Sur les 496 personnes interviewées, 96 ont souffert de migraine, donnant le taux de prévalence brut de 19 % (96/496) et spécifique de 26,8 % (76/284) chez la femme versus 9,4 % (20/212) chez l'homme. Seuls 35 % des malades ont consulté un médecin, et 28% reçu des soins appropriés. La population migraineuse était plus jeune (p <0,01). Les statuts de femme (p <0,0001) ou de divorcé (p <0.05), le style de vie urbain (p <0,005), mais pas le bas niveau d'instruction (p >0,1), ou la grande taille familiale (p >0,1) étaient associées à la maladie.

Résultat
Du fait de sa fréquence élevée, la migraine pose à Madagascar, un problème de santé publique.

SUMMARY

Background
Epidemiological data on migraine are rare or discrepant in the malagasy medical literature.

Objective
This general population survey, carried out in the "Grand Antananarivo" from June 1st 2001 to December 31st 2001, is intended to supply this deficiency.

Methods
People of both sexes more than 14 years old, having suffered from recurrent headaches during the 12 months preceding the study, were included.

Results
Ninety six (96) out of the 496 persons submitted to the interview have suffered from migraine, giving the crude prevalence rate of 19 %, and specific rates of 26.8 % for women versus 9.4 % for men. Only 35 % of

SUMMARY

sufferers have consulted a doctor, and no more than 28 % received an appropriate treatment.
Migraineurs were younger (p <0.01). The disease was associated with female status (p <0.0001), divorce (p <0.05) and urban lifestyle (p <0.005), but neither with lower instruction (p >0.1), nor with the big family size (p >0.1).

Conclusion
Migraine set a public health problem because of its high prevalence.

INTRODUCTION

Douze à quinze pour cent de la population occidentale souffrent de migraine (5,7,9). L'Africain noir et l'Asiatique, des deux sexes, seraient moins touchés par la maladie (12,19). Les malgaches, qui partagent les deux origines raciales, devraient être aussi épargnés.
Or, les données épidémiologiques disponibles sont discordantes : une étude faite dans un centre de soins primaires d'Antananarivo, la capitale de Madagascar, rapporte une faible prévalence (16), alors que la migraine représente le deuxième motif de consultation neurologique à Mahajanga, une ville côtière (1). D'où la décision de mener cette enquête pour décrire la situation, en population générale.

POPULATION D'ETUDE – METHODES

L'enquête a été menée sur la population du « Grand Antananarivo » (14) , qui comprend le Renivohitra (capitale), de type urbain et les fivondronana (préfectures) d'Ambohidratrimo, d'Antananarivo avaradrano et atsimondrano, de type rural.
Ces fivondronana sont subdivisés en firaisana (communes rurales ou arrondissements, pour la capitale) eux mêmes formés de fokontany (quartiers), .
Les échantillons ont été tirés au hasard parmi les personnes des deux sexes, > 14 ans résidentes des habitats privés issus des fokontany.
Trois arrondissements la capitale sur les six, et un parmi les 3 fivondronana périphériques, ont été tirés au hasard .
Au cours de l'étape suivante, on procédait au tirage, également aléatoire du ¼ des communes rurales constitutives de ce fivondronana .
On recensait ensuite tous les fokontany des arrondissements urbains et des communes rurales, et on y repérait, avec un procédé également aléatoire, les habitats privés où l'on désirait prendre la personne à enquêter.
La taille globale de l'échantillon a été calculée, en tenant compte de la prévalence attendue de la maladie (15%), de la précision souhaitée (3%) et du risque alpha (0,05).
Le nombre de personnes tirées par firaisana était fonction du nombre de ses habitants.
L'enquête, qui s'est déroulée du 1erJuin 2001 au 31 Décembre 2001, a été menée par deux étudiants en médecine en fin de cursus, préalablement formés à l'enquête porte à porte (18).
Le questionnaire comportait des renseignements sur l'état civil de la personne interrogée (sexe, âge, niveau d'instruction, statut matrimonial, taille de sa famille, hérédité céphalalgique, style de vie urbain ou rural) et sur les caractéristiques de la céphalée.
Ont été inclus, comme cas de migraine, les personnes ayant souffert de céphalées récidivantes, au cours des douze mois précédant l'enquête.
Une fois dépistés, ces cas étaient authentifiés par un neurologue entraîné dans le domaine de la migrainologie, et utilisant les critères de l'International Headache Society (4).
Les différentes comparaisons ont été faites avec le test du X^2.

RESULTATS

Les 1er, 2ème et 6èmearrondissements de la capitale (type urbain) et 6 des 24 firaisana du fivondronana d'Antananarivo atsimondrano (représentant du pattern rural), ont été tirés au hasard

L'effectif total de l'échantillon était fixé à 500 personnes.
Le nombre de dossiers complet, à la fin de l'enquête était de 496.
Cent quarante trois (143) cas de migraine ont été dépistés dont 96 authentifiés par le neurologue, ce qui donne les taux de prévalence brut de 19 % (96/496) et spécifique de 26,8 % (76/284) pour les femmes vs 9,4 % (20/212) pour les hommes.
Les personnes migraineuses étaient plus jeunes (29 ±12 ans) que les non migraineuses (33 ±14,6 ans) [p <0,01] mais, à part le sexe (surreprésentativité féminine), le style de vie (atteinte plus prononcée de la population urbaine) et le statut matrimonial (taux plus élevé chez les personnes divorcées), les autres caractéristiques socio-démographiques (niveau d'instruction, grande taille familiale) n'étaient pas discriminantes (tableau 1).
Parmi les personnes souffrantes, 35 % seulement (34/96) ont consulté un médecin et 28 % seulement ont pu suivre régulièrement le traitement préventif.
Les caractéristiques de la maladie sont rapportées sur le tableau 2.

DISCUSSION

Bien que notre échantillon ne soit pas représentatif de l'ensemble des malgaches, la prévalence de la migraine, dans notre population, paraît plus élevée que celles, rapportées chez le Caucasien [x 1,4] (5,7,9,11), chez le Noir africain [x 3,5] (12) et chez le Chinois [x 27,5] (19).
Certaines enquêtes occidentales ont toutefois rapporté des taux aussi élevés (13,17).
Dans notre étude, il s'agit de migraine « active », celle qui nécessite vraiment une intervention médicale (8).
Du fait du double lien qu'elles entretiennent (3), la prévalence élevée de la migraine concorde avec celle de la dépression, retrouvée dans une étude récente (2).
Bien que le handicap provoqué par la maladie soit reconnu (17,18), le taux de recours médical est faible (35 %), et peu de patients reçoivent une prise en charge correcte (28%).
Ce seraient plutôt l'insuffisance d'informations et l'ancrage populaire aux pratiques traditionnelles qui favorisent la sous médicalisation des patients, mais non leur niveau d'instruction global (similaire à celui des non migraineux) [tableau 1].
De ce fait, les centres de soins primaires sont peu fréquentés (étude de Tehindrazanarivelo & coll)[16], tandis que les cas sévères ou survenant chez les per- sonnes suffisamment occidentalisées, sont concentrés dans les services spécialisés (1).
Les médecins généralistes eux mêmes, qui interviennent en première ligne, sont peu familiarisés avec la maladie, d'où les errances diagnostiques, déroutantes pour les malades: carences calcique ou magnésienne, troubles oculaires, hypothétiques sinusites (1).
Globalement, les caractéristiques de la maladie et des malades (prédominance féminine, âge plus jeune par rapport aux non migraineux, hérédité) sont superposables à celles rapportées dans la littérature (tableaux 1 et 2).
Les effets défavorables de certains styles de vie (stress urbain), des déboires matrimoniaux (effet négatif du divorce) nécessitent une confirmation par des études plus appropriées.
Contrairement à ce qui se passe chez leurs lointains ancêtres (l'africain et l'asiatique), les malgaches semblent avoir une propension à faire la migraine.
Les facteurs génétiques, à eux seuls, n'arrivent pas à expliquer cette différence : la culture et l'environnement jouent certainement un rôle qu'il faudrait identifier par des études plus approfondies.

CONCLUSION

Bien que non représentatifs de l'ensemble des malgaches, les résultats de cette enquête confirment la forte prévalence de la migraine, déjà évoqués par une étude clinique antérieure (1).
Cette maladie pose, par conséquent, un problème de santé publique qui devient une priorité, si l'on tient compte du nombre de malades échappant au circuit thérapeutique, alors que l'on dispose de médicaments efficaces et de coût accessible. (6,15).
L'idéal serait d'entreprendre des études plus exhaustives et de plus grande envergure, dans d'autres régions de l'île, mais leur organisation, coûteuse, s'avère impossible dans le contexte économique actuel.

Il serait plus judicieux de mettre d'emblée en place un programme national de lutte, intégrant la sensibilisation et la formation des professionnels de santé, l'information du public et l'approvisionnement du marché en médicaments efficaces (génériques).

L'Organisation Mondiale de la Santé, qui a classé la migraine parmi les quatre affections les plus handicapantes [avec la psychose, la tétraplégie et la démence] (10), et les Sociétés savantes peuvent fournir l'appui technique et scientifique, voire financier pour accompagner un tel programme.

TABLE 1 - Caractéristiques des patients migraineux.

Items	migraineux	non migraineux
Age moyen *	29 ±12 ans	33 ±14.6 ans
Mode	19 ans	16 ans
Ages extrêmes	16 à 67 ans	16 à 81 ans
Sex ratio **	hommes/femmes = 0.21	hommes/femmes = 0.97

* Les migraineux sont plus jeunes que les non migraineux (p <0,01)
**La migraine était plus fréquente chez la femme (p <0,0001)

Hérédité: 1/3 des migraineux (32/96) avaient une hérédité familiale directe pour la maladie
Style de vie: la migraine était plus fréquente en milieu urbain (p <0,005)
Situation matrimoniale: il y avait plus de divorcés dans la population migraineuse (p <0,05)
Pas de différence entre migraineux et les non migraineux pour les items suivants : bas niveau d'instruction (p >0,1), grande famille (>6 personnes) [p >0,1].

TABLE 2 - Caractéristiques des accès migraineux.

Caractéristiques	Fréquence et pourcentage
unilatéralité de la douleur	61/96 (63.5 %)
pulsatilité	86/96 (89.5 %)
nausées ou de vomissements	86/96 (89.5 %)
sonophotophobie	82/96 (85 %)

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ETUDES CLINIQUES / CLINICAL STUDIES

LES EFFETS COGNITIFS DES ANTIEPILEPTIQUES DANS UNE POPULATION NIGERIANE

COGNITIVE EFFECTS OF ANTI-EPILEPTIC DRUGS IN NIGERIANS WITH EPILEPSY

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Keywords : Africa, Anti-epileptic drugs, Epilepsy, Memory, Mental speed, Nigeria, Afrique, Antiépileptiques, Epilepsie, Mémoire. Nigéria, Tests psychologiques

ABSTRACT

Background
Epilepsy is particularly highly prevalent in developing African countries and has been associated with cognitive disturbances, but more importantly is the contribution of the anti-epileptic drugs (AEDs).

Objective
This study aimed at comparing the effects of AEDs on the cognitive functions of Nigerian epileptic patients.

Methods
This is a prospective study of 55 consecutive patients with epilepsy, aged 14 years and above, over a two year period (October 2000 to October 2002), recruited from the Neurology Clinic of the University Teaching Hospital, Benin City, Nigeria. Anti-epileptic treatment with either carbamazepine (19 patients), phenytoin (18 patients), or phenobarbitone (18 patients) which was randomly assigned constituted the interventional measure.
Cognitive testing, using the Iron Psychology (FePsy) a computerized neuro-psychological test battery, measured the visual and auditory reaction times, the continuous performance test and the recognition memory test to assess the mental speed, attention and memory respectively.

Results
The effect of the individual drug on cognitive performance revealed significant impairment of mental speed ($p<0.001$) with the exemption of improved performance with phenytoin on auditory reaction time ($p>0.05$). Carbamazepine did not significantly affect the verbal (Words section) memory scores ($p>0.05$) implying better performance in tasks of verbal memory ($p<0.05$). All the three anti-epileptic drugs strongly reduced the attention abilities of the patients ($p<0.001$). Patients on phenobarbitone had the worst scores in both the verbal and non-verbal memory tasks.

Conclusion
The results of this study will be useful in the rationale selection of anti-epileptic drugs with the objective of minimizing, as much as possible, their cognitive side effects.

RESUME

Introduction
La prévalence de l'épilepsie est élevée en Afrique de même que les troubles cognitifs associés à l'utilisation des antiépileptiques (AEDs).

RESUME

But
Le but de l'étude est de comparer les effets des AEDs sur les fonctions cognitives d'une population épileptique nigériane.

Methodes
L'étude prospective, randomizée, concerne 55 patients épileptiques âgés de 14 ans et plus, étudiés sur une période de 2 ans (octobre 2000 à octobre 2002) et recrutés dans le service de neurologie du CHU de Benin City. Le traitement était soit la carbamazépine, (19 patients) soit la phénitoïne (18 patients), soit du phénobarbital (18 patients)
Les tests cognitifs utilisant le Iron Psychology (FePsy), tests psychologiques, ont mesuré les temps de réaction auditif et visuels, les tests de performance de la mémoire mentale, de l'attention et de la mémoire.

Resultats
Chacun des médicaments a entrainé une perturbation de la vivacité mentale ($p < 0.001$) à l'exception d'une amélioration du temps de réaction auditive avec la phénitoïne ($p > 0.05$). La carbamazepine n'a pas affecté de manière significative la mémoire verbale (mots) ($p > 0.05$). Tous les autres antiépileptiques ont réduit les capacités d'attention des patients ($p < 0.001$) Les patients sous phénobabital ont eu les plus mauvais scores.

Conclusion
Les résultats de cette étude aideront à une utilistion rationnelle des anti-épileptiques afin d'éviter les effets cognitifs.

INTRODUCTION

Epilepsy is the second most common disorder of the central nervous system, affecting 1% of the human population (5). It is particularly highly prevalent in developing African countries (10,12). Epilepsy has been associated with cognitive disturbances, but more importantly is the contribution of the anti-epileptic drugs (AEDs).
Anti-epileptic drugs (AEDs) have adverse effects on cognitive functions such as attention, memory and psychomotor speed. There is evidence that drug-induced cognitive impairment has great impact on critical daily life function of patients with epilepsy (3,7). The cognitive effects of AEDs are of special concern because they are iatrogenically induced (3).
Comparative studies of AEDs in developed countries have shown that while carbamazepine had minimal side effects, phenytoin and phenobarbitone have less favorable cognitive side effects with impairments of mental speed, memory and attention (4,13,14). These latter two drugs are however the most widely used in developing countries, because of good efficacy, broad spectrum of activity and low cost (11).
There is little information available in the literature on the effect of AEDs on the cognitive functions of African epileptic patients. This study was aimed at comparing the effects of the commonly used AEDs on the cognitive performances of Nigerian patients with epilepsy. The results of such a study will be useful in the rational selection of anti-epileptic drugs and in the educational and vocational counseling of patients. Moreover, this study provides another opportunity to gain more information about the older AEDs, i.e phenobarbitone and phenytoin.

SUBJECTS AND METHODS

Patient's Selection

All the patients that presented with recurrent afebrile seizures in the outpatient neurology clinic of the University Teaching Hospital Benin City, Nigeria between October 2000 and October 2002 were recruited i.e. a total of 147 patients.
A total of 55 consecutive patients aged 14 years and above, satisfied the inclusion criteria. Patients with

psychiatric illness, mental sub-normality and those with progressive neurological disorders were excluded from the study. An EEG was not required for diagnosis, as epilepsy is a clinical diagnosis. These patients have not been on AED prior to presentation.

Patient's Demographic Data

All patients completed questionnaires designed to obtain demographic information on the age, sex, level of education, age at onset of seizures, frequency of seizures and type of seizures.
The seizure types were classified clinically, based on the International League against Epilepsy (ILAE) classification of 1981 (6). The patients comprised 35 men and 20 women, with a mean age of 29.8 (+/- 12.47) years. Seventeen patients had primary education, 26 had secondary education and 12 had post- secondary education. Forty-five patients had primary or secondary generalized seizures while 10 had partial seizures. Laboratory investigations done on the patients included:
(a)Liver function tests (b) Urea and electrolytes (c) Blood sugar estimations and (d) if indicated, lumbar puncture for cerebrospinal analysis.

Patients and Drug Therapy

Patients and Drug Therapy
After initial diagnoses, the patients were randomly assigned to anti-epileptic medications, with nineteen (19) patients receiving carbamazepine (CBZ), eighteen (18) receiving phenobarbitone (PB) and eighteen (18) phenytoin (PHT).
The treatment was chosen at random.
(A)Carbamazepine group
The median dosage for these patients was 600 mg per day (range 400-1200 mg) with a modal seizure frequency of 3-4 attacks per month, and mean duration of seizures of 6.5 years.

(B)Phenytoin group
The median dosage was 300 mg per day (range 200-300 mg) with a modal seizure frequency of 2 attacks per month, and mean duration of seizures of 5.5 years.

(C)Phenobarbitone group
The median dosage was 120 mg per day (range 60-180mg) with a modal seizure frequency of 3-4 attacks per month and a mean duration of 7.5 years.

There was no significant difference in the three groups of patients at recruitment in terms of seizure variables or demographic data. (Refer Table 1)
The patients' cognitive performances were assessed after three months of AED therapy, following the initial pre-medication assessment at recruitment. AEDs were available freely to all patients in the study. At the initial visit each patient was given a health talk on AED compliance and was well motivated to take AEDs because of the stigma locally attached to epilepsy.
There were no facilities for AED serum level estimations in our hospital where the study was conducted.

Cognitive Testing

The administration of tests was done with the FePsy computerized neuropsychological test battery (1, 3, 8, 9). Test presentation and response registration were controlled by a microcomputer, but one of the authors (O.O) was always present to adjust instructions to the individual performance level of the patients. The cognitive assessment was not blind as the author (O.O) was aware of the patients' drug status. However, this did not affect result of neuropsychological testing as it is computer-controlled, and the evaluation of performance is not dependent on the author, but on the testees' cognitive abilities.
(A)Short-term Memory was assessed using the Recognition Memory test (RMT). The test involves the use of study items which consist of 3 or 4 figures (for the visual, non-verbal memory test) and 4 or 6 words (for the verbal memory test) which are presented simultaneously.
The task is divided into a study phase in which the material to be remembered is presented and a test phase in which recognition is tested. A delay of two seconds is allowed between study phase and the test phase. In the test phase, the figures or words are presented again and the target item has to be recognized. Patients with primary school education were tested using 3 figures and 4 words, while those with secondary and post-secondary education were tested using 4 figures and 6 words. The results were calculated as percentage of correct responses. The evaluation of the recognition task was performed in the context of the short-term

memory function (8).
(B)Psychomotor Speed was assessed by the Simple Reaction Time. In the auditory version the testee was asked to react as quickly as possible to sound stimuli of 800 hertz generated by the computer. For the visual version, the testee reacts as quickly as possible to a white square in the middle of the computer screen. In both versions the inter-stimulus interval is randomly varied form 2.5 to 4 seconds. The evaluation of the results was done within the context of speed of information processing and alertness functions (8).
(C)Attention was assessed using the Continous Performance Test, which involves the display of a string of eight characters, either 'XXXXXXXX' or 'XAXXXXXX'. The stimuli are presented during a short (200 msec) period. The testee has to respond (by pressing a key on the keyboard) to the appearance of a character 'A' at a random position in the stimulus string. The results are computed by the FePsy software, according to a signal detection model (8).

Statistical Analysis

The patients were divided into three categories based on the type of AEDs received. The data from each cognitive task was separately submitted to a one-way analysis of co-variance with cognitive performance as the dependent variable and AED medication as the independent variable. Significance level was set at 5%.
Data comparing performances pre- and post- medication were tested using the Student's 't' test with level of significance set at $p< 0.05$.

RESULTS

Reaction Times (Mental speed)
The comparison of the data on the cognitive performances of the patients pre- and post medication revealed statistically significant adverse effect on the mental speed, with phenobarbitone group having the worst scores ($p< 0.001$). On the other hand, phenytoin had a favorable effect on the auditory reaction time ($p> 0.05$). Refer Tables 11b and 11c. But when the effects of all the three AEDs were compared, there was no statistically significant difference between the three drug groups in both auditory and visual reaction times. Refer Table III.

Memory
The carbamazepine group performed better than those on phenytoin and phenobarbitone in tasks of both verbal {Words} and visual, non-verbal memory {Figures} but only the difference in verbal memory performance reached statistical significance ($p < 0.05$). Refer Table III. The effect of carbamazepine on verbal and visual memory was also favorable when the three AEDs were compared post medication ($p>0.05$) refer table 11a. Patients on phenobarbitone had the worst scores in both verbal and non-verbal memory tasks. Refer Table III.

Attention
All the three drug groups showed significant worse performances in attention when the pre- and post-medication Continuous Performance test scores {d'} were compared ($p< 0.05$) without significant difference in their response bias($p>0.05$). But the scores reflected better perceptual sensitivity and sustained attention in patients on phenytoin and carbamazepine compared to those on phenobarbitone; though these differences did not reach statistical significance. Refer Table III

DISCUSSION

This study was aimed at assessing the effects of phenobarbitone, phenytoin and carbamazepine on cognitive function in newly diagnosed Nigerians with epilepsy. The patients were randomly assigned to one of the three AEDs and their cognitive function assessed by computer at recruitment and three months after commencement of medications. The computer-based test battery has been shown to be highly sensitive in detecting cognitive dysfunction in patients with epilepsy (8, 9). This setting is unique as similar studies have not been carried out in Africans with epilepsy.
The study showed significant deterioration in cognitive performances with all the three drugs when their scores before and after medication were compared, with the only exemption being the improved performance in the auditory reaction time in patients on phenytoin and significant improvement in verbal memory scores in

the carbamazepine group.
However, there were no significant differences in auditory and visual reaction times between the three AEDs. Although on the whole, reaction times were longer for the patients on phenobarbitone. Patients on carbamazepine performed significantly better in verbal memory tasks, and also had a trend towards better performances in non-verbal memory. Patients on phenobarbitone had the worst performance in the tests of sustained attention, though there was no difference in the response bias of the three groups of patients. This implies that this observation is not due to chance.
Our study reconfirms in Africans the observations in the literature that carbamazepine has a relatively favorable cognitive profile compared to phenytoin and phenobarbitone (1, 2, 4, 13, 14). Though it would have been desirable to correlate the cognitive performances with serum levels of these drugs, this facility was not available in our center.

CONCLUSION

Our study has confirmed the presence of cognitive impairments in epilepsy prior to administration of, and the worsening of these by, antiepileptic medications commonly used in Nigeria and other African countries. There is significant deterioration in attention abilities, mental speed and memory performance. However, carbamazepine appears to have a more favorable profile than phenytoin and phenobarbitone.
Coping with day-to-day activities demands unimpaired cognitive abilities including memory, attention and psychomotor speed. For instance, the learning process requires sustained attention and intact memory. Although costs and the relative unavailability of health care systems will not allow the ideal selection of AEDs in all circumstances, the results of this study suggests the need for careful follow up of African patients on AEDs, especially phenobarbitone, in other to minimize cognitive side effects and to maximize quality of life.
There is need for simple tests of cognitive function that can screen patients with epilepsy and determine the need for more sophisticated tests of cognitive function, such as computerized test used in this study.

TABLE 1 - Descriptive details of the patients

Variables		Carbamazepine (Group N= 19)	Phenobarbitone (Group N= 18)	PHENYTOIN (Group N=18)
Sex M/F		12 / 7	12 / 6	11 / 7
Mean age [years]		27.8 +/- 8.9	18.7 +/- 5.6	35 +/- 14.7
Range [years]		14 - 38	15 - 26	29 - 55
Level of Education				
	Nil	0	0	0
	Primary	5	6	6
	Secondary	10	8	8
	Post-Secondary	4	4	4
Mean seizure frequency		3-4 attacks/month	2 attacks/month	3 attacks/month
Mean duration of epilepsy		6.5 years	5.5 years	7.5 years
Seizure Type				
Generalized		16	15	14
Partial		3	3	4

TABLE 2 - The Effect of AEDs on Mean Cognitive Performances - [pre- and post-medication]

TABLE 2a - Carbamazepine Group (n = 19)

Cognitive Tests	Pre Drug	Post Drug	Level of significance
Auditory Reaction Time (milliseconds)	473.13	500.27	P < 0.001
Visual Reaction time (milliseconds)	423.05	461.60	P < 0.001
Recognition Memory Test (% correct)			
Words (verbal)	41.97	44.0	P > 0.05 (better response)
Figures (non-verbal)	34.17	40.31	P > 0.05 (better response)
Continuous Performance Test			
Perceptual sensitivity	0.63	0.69	P > 0.05
Response Bias	0.79	0.75	P > 0.05

TABLE 2b - Phenytoin Group (n = 18)

Cognitive Tests	Pre Drug	Post Drug	Level of significance
Auditory Reaction Time (milliseconds)	443.28	442.50	P > 0.05
Visual Reaction time (milliseconds)	307.5	370.29	P < 0.001
Recognition Memory Test (% correct)			
Words (verbal)	44.86	34.10	P < 0.05
Figures (non-verbal)	38.05	32.01	P < 0.05
Continuous Performance Test			
Perceptual sensitivity	0.94	0.87	P < 0.05
Response Bias	0.81	0.79	P > 0.05

TABLE 2c - Phenobarbitone Group (n = 18)

Cognitive Tests	Pre Drug	Post Drug	Level of significance
Auditory Reaction Time (milliseconds)	400.20	503.00	P < 0.001
Visual Reaction time (milliseconds)	435.90	544.20	P < 0.001
Recognition Memory Test (% correct)			
Words (verbal)	43.80	18.75	P < 0.001
Figures (non-verbal)	26.19	22.38	P < 0.05
Continuous Performance Test			
Perceptual sensitivity	0.25	0.15	P < 0.01
Response Bias	0.55	0.52	P > 0.05

TABLE 3 – The Effect of anti-epileptic drugs on mean cognitive performances

Cognitive Tests		Carbamazepine (N=19)	Phenobarbitone (N=18)	Phenytoin (N=18)	
Auditory reaction time (milliseconds)	Dominant hand	500.27	503.0	442.50	NS
	Non-dominant hand	434.00	532.00	420.20	NS
Visual reaction time (milliseconds)	Dominant hand	461.60	544.20	370.29	NS
	Non-dominant hand	439.3	453.20	357.20	NS
Recognition memory test (% correct)	Words	44.00	18.75	34.10	P<0.05 S
	Figures	40.31	26.19	32.01	NS
Continuous performance test-vigilance	Perceptual sensitivity	0.69	0.15	0.87	NS
	Response bias	0.75	0.52	0.79	NS

NS = Not Significant
S= Significant

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ETUDES CLINIQUES / CLINICAL STUDIES

FAIBLE INCIDENCE DU REFLEXE CUTANE PLANTAIRE CHEZ L'AFRICAIN

LOW INCIDENCE OF EXTENSOR PLANTAR REFLEX IN NEWBORNS IN AN INDIGENOUS AFRICAN POPULATION

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Keywords : plantar reflex, Babinski, African, neonate, Afrique, nouveau-ne, examen neurologique, reflexes, reflexes cutane plantaire

ABSTRACT

Background
The plantar reflex has been reported to be predominantly flexor in African infants and in African subjects with lesions of the corticospinal tracts. This study was done to determine the incidence of extensor plantar reflex in healthy full-term newborns in an indigenous African population.

Methods
Healthy term newborns with Apgar score of 8 and above at one minute were recruited into the study consecutively in a maternity hospital in Ibadan, Nigeria. The plantar reflex was elicited by stroking the lateral side of the sole with firm pressure, between 24 – 48 hours after delivery.

Results
Of 461 newborns, the plantar reflex was extensor in 85, flexor in 374, and absent in two. The cumulative incidence of extensor plantar reflex was 18 % (95 % CI 15 – 22), while the standardised incidence ratio was 25 % (95 % CI 22 - 27).

Conclusion
This study shows that the plantar reflex is predominantly flexor in this indigenous African population. Although the physiological basis of this finding is not known, it may indicate early maturation of the corticospinal tracts in African newborns.

RESUME

But
Le but de l'étude est de déterminer l'incidence du réflexe cutané plantaire chez des nouveaux nés Africains en bonne santé.

Méthode
Les nouveaux nés à terme avec un score d'Apgar de 8 ou plus ont été inclus dans une étude consécutive realisée dans la maternité d'Ibadan au Nigéria. Le réflexe cutané plantaire a été recherché selon les règles, 24 et 48h après la délivrance.

Résultats
Sur 461 nouveaux nés le réflexe cutané a été observé en extension dans 85 cas et en flexion dans 374 cas et absent dans 2 cas. L'incidence cumulative du réflexe cutané plantaire était de 18% (95% CI 15-12),

RESUME

tandis que le ratio de l'incidence standard était de 25% (95% CI 22-27)

Conclusion
Cette étude montre que le reflexe cutané plantaire est prédominant en flexion dans cette population africaine autochtone. Bien que les bases physiologiques de ce constat ne soit pas connu, il pourrait indiquer la précoce maturation du tractus cortico spinal chez le nouveau né africain.

INTRODUCTION

The plantar reflex, which is one of the most frequently tested reflexes in clinical neurology(11), is usually elicited to assess the integrity of corticospinal pathways(11). In healthy adults the plantar reflex is usually flexor, but it usually becomes extensor following lesions of the corticospinal pathways(14). In healthy newborns, however, the plantar reflex has been reported to be extensor in most studies(15), but a study reported higher occurrence of flexor plantar reflex in normal newborns(6). Although it has been proposed that the pattern of plantar reflex in newborns depends on whether the sole was stimulated with noxious or non-noxious stimuli(1), this is not accepted generally (14).

The presence of extensor plantar reflex in newborns, which usually converts to flexor during the first year of life(4) is attributed to immaturity of the corticospinal tract(11). However, a study shows high occurrence of flexor plantar reflex in infants in an African population(7). It has been reported that occurrence of extensor plantar reflex is low in Africans with lesions of the corticospinal tracts(13). These observations suggest that the pattern of plantar reflex in African newborns may be different from what has been observed in Caucasians. This study was conducted to determine the incidence of extensor plantar reflex in newborns in an indigenous population in Africa.

MATERIALS AND METHODS

This study was conducted in a large maternity hospital, which is located at the centre of Ibadan, Nigeria, a large town on latitude 07° 23. 882 N and longitude 003° 54. 564 E. This maternity hospital serves the indigenous population of over 3 millions in Ibadan, which is one of the largest towns in West Africa. Most women who attend this hospital do not belong to the high socio-economic group, who are more likely to attend private clinics or tertiary hospitals. Although some deliveries still take place in home settings by traditional birth attendants in Ibadan, the number is too small to bias selection of subjects into this study significantly.

Approval for the study was obtained from local ethical committee, and informed consent was obtained from the mothers. The study population was defined as all normal deliveries in this large public maternity hospital, which adequately represent normal babies in the indigenous population that the hospital serves. Normal deliveries were defined as babies born at term by vaginal delivery from pregnancies free of complications, deliveries free of foetal distress, Apgar score of at least 8 at 1 min after birth, and birth weight at least 2.5 kg. All babies born to mothers with hypertension, diabetes mellitus, pre-eclampsia, and other medical complications of pregnancy were excluded, as well as caesarean deliveries, and prolonged labour.

Two senior doctors in the paediatric unit of this maternity hospital were trained to examine the plantar reflex reproducibly, and with minimal inter-observer variation using the blunt end of a matchstick. If the response was equivocal the examiner was allowed to repeat twice. All the babies were examined between 24 to 48 hours after birth. The babies were examined supine with the knee held in extension. The lateral aspect of the sole of the feet was stimulated with firm, but not noxious stimuli, beginning at the heel and sweeping medially at the level of metatarsal, but avoiding the base of the toes as described in a standard neurological examination text(3).

The two examiners trained with five subjects, whilst they observed each other elicit the reflex to ensure uniformity. After the method was understood, 10 subjects were examined repeatedly twice by each examiner to determine between and within observer agreement. After satisfactory kappa of 1.0 for intra-observer

agreement, and inter-observer agreement of 0.8, 50 subjects were examined in the pilot phase of the study to determine sample size. In these subjects, the plantar reflex was extensor in 13 (26 %), but flexor in 37 (74 %). The number of subjects required to detect incidence of 26 % with 95 % CI from 22 % to 30 % at alpha level of 0.05 and beta level of 0.20 is 461. Subjects were recruited consecutively.

The cumulative incidence of extensor plantar reflex was calculated. The expected number of newborns with extensor plantar reflex in this population if occurrence of extensor plantar reflex was 75 %, the average incidence that was reported in some studies outside of Africa(9), was calculated. The indirect standardised incidence ratio of observed and expected number of cases was calculated.

RESULTS

There were 461 normal newborns with mean Apgar score of 8 (SD 0.1, range 8 -10, median 8) at one minute, mean birth weight of 3.1 kg (SD 0.4, range 2.5 – 4.6, median 3.0), mean birth length of 48 cm (SD 3, range 34 – 55, median 48), and mean occipito-frontal circumference of 34 cm (SD 2, range 30 – 49, median 34).

The plantar reflex was extensor in 85 newborns, flexor in 374 newborns, but absent in two newborns. Observed cumulative incidence of extensor plantar reflex was 18 % (95 % CI 15 – 22). The expected number of newborns with extensor plantar reflex in this population, if occurrence of extensor plantar reflex was 75 %, was 346. The standardised incidence ratio was 25 % (95 % CI 22 - 27).

DISCUSSION

This study shows low incidence of extensor plantar reflex in newborns in this indigenous African population. The standardised incidence ratio, which shows that occurrence of extensor plantar reflex in this population is about a quarter of what is observed in Caucasians, indicate that flexor plantar reflex predominate in healthy newborns in this population. Although this finding cannot be generalised to all communities in Africa, it supports anecdotal reports(13).

Both noxious and non-noxious stimuli have been used to elicit the plantar reflex, which is a skin-muscle reflex(15), in different studies. It has been suggested(1) that the patterns of plantar reflex in studies depend on whether noxious or non-noxious stimuli was used to elicit the plantar reflex. Although a study which used noxious stimuli reported predominantly extensor plantar reflex in newborns(8), while a study which used non-noxious stimuli reported predominantly flexor plantar reflex in newborns(6), predominantly extensor plantar reflex has been reported in a study which used non-noxious stimuli(10). It is noteworthy that non-noxious stimuli, like Gordon, Schaefer and Gonda(3), can be used to elicit extensor plantar reflex in subjects with lesions of the corticospinal tracts. While there are qualitative and quantitative differences in the stimuli which different investigators use to elicit the plantar reflex, it is unlikely that differences in methodology alone will account for the high occurrence of flexor plantar reflex in this study.

Anecdotal observations that the pattern of plantar reflex is different in Africans have been supported by some studies(7,12) The physio-pathological basis for the low occurrence of extensor plantar reflex in Africans(13), in clinical situations when extensor plantar reflex is expected, is not known. Although it has been suggested that high occurrence of flexor plantar reflex in African newborns may be due to early maturation of the corticospinal pathways(5), this has not been confirmed. The suggestion that low occurrence of extensor plantar reflex in Africans with lesions of the corticospinal tract is due to barefoot walking(13)which may have damaged the receptors of the soles of the feet, has also not been confirmed.

In conclusion this study shows high occurrence of extensor plantar reflex in healthy newborns in an indigenous African population. Although the physiological basis of this observation is not clear, it is possible, as earlier suggested(5), that the corticospinal tracts mature earlier in Africans.

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ETUDES CLINIQUES / CLINICAL STUDIES

LES MANIFESTATIONS NEUROLOGIQUES DU VIH/SIDA : REVUE DE 154 CAS DANS UN CENTRE HOSPITALIER UNIVERSITAIRE NIGERIAN

PATTERN AND OUTCOME OF NEUROLOGICAL MANIFESTATIONS OF HIV/AIDS - A REVIEW OF 154 CASES IN A NIGERIAN UNIVERSITY TEACHING HOSPITAL – A PRELIMINARY REPORT

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Keywords : Africa, AIDS, HIV, Nigeria, Neurological, Afrique, neurosida, VIH, SIDA

ABSTRACT

Background
The HIV is neurotropic and clinicians need to be aware of its myriad neurologic manifestations, as these may be the only clinical presentation.

Objective
To evaluate the clinical spectrum and outcome of the neurologic manifestations in patients with HIV / AIDS over a ten year period.

Design
case – note based retrospective follow-up study.

Settings
Olabisi Onabanjo University Teaching Hospital; Nigeria.

Participants
Patients attending the HIV outpatient clinic and medical in-patients with AIDS.

Intervention
Treatment was symptomatic and specific treatment was administered for indicator diseases. Highly Active Anti-retroviral Therapy (HAART) was not used routinely.

Main Outcome Measure
Neurologic impairment related to HIV / AIDS and its sequelae within 6 months.

Results
A total of 362 patients with HIV / AIDS were reviewed over a ten-year period, of which 154 patients, (42.5%) had neurological manifestations. Forty-five (29%) patients had Herpes zoster, 40 (26%) had TB meningitis (TBM), 19 (12%) had vacuolar myelopathy (VM), another 19 (12%) had AIDS dementia complex (ADC), 15 (9.7%) had toxoplasma encephalitis, 10 (6.5%) had distal sensory polyneuropathy, 4 (2.6%) had inflammatory demyelinating polyneuropathy, and 2 (1.3%) had subacute combined degeneration of the spinal cord. An overall 6-months fatality of 45% was recorded with ADC, VM and TBM as predictors of high

ABSTRACT

fatality.

Conclusion
Herpes zoster appears to be the commonest neurological manifestation while TBM is the commonest AIDS defining illness. Our experience indicates that unusual neurological manifestations could be the first manifestation of HIV/AIDS, and there is need for awareness of these entities by practising doctors for prompt diagnosis and treatment.
Screening of all patients with Herpes zoster for HIV is also advised.

RESUME

Introduction
Le VIH est neurotrophique et les praticiens doivent être vigilants compte tenu du caracère polymorphe des manifestations neurologiques cliniques.

But
Evaluer les aspects cliniques et l'évolution des manifestations cliniques chez des patients HIV/SIDA durant une période de 10 ans.

Méthodes
Il s'agit d'une étude rétrospective réalisée à l'Olabisi Onabanjo University Teaching Hospital (Nigeria) chez des patients en ambulatoire pour les séropositifs ou hospitalisés, pour les sidéens. Le traitement était symptomatique et rarement trithérapie.

Résultats
362 patients VIH / SIDA ont été étudiés sur une période de dix ans. 154 patients (42.5%), présentaient des manifestations neurologiques. Quarante cinq patients (29%) avaient un zona, 40 (26%) une méningite tuberculeuse (TBM), 19 (12%) une myéopathie vacuolaire (VM), 19 (12%) une démence (AIDS dementia complex, ADC), 15 (9.7%) une toxoplasmose cérébrale, 10 (6.5%) une polyneuropathie distale sensitive, 4 (2.6%) une polyneuropathie démyélinisante inflammatoire, and 2 (1.3%) une myélopathie subaiguë subacute.

Conclusion
Le zona apparaît comme étant la manifestation neurologique la plus commune.
Notre expérience montre que les manifestations neurologiques inhabituelles peuvent être les premières manifestations du VIH/SIDA et interpelle tout médecin en présence de tout malade atteint d'un zona.

INTRODUCTION

Neurologic disorders are among the most frequent and devastating complications of HIV infection, and this may be its only clinical manifestation (1,7). As more effective therapies allow patients with AIDS to live longer, the prevalence of neurologic complications is likely to increase.
There has been dearth of information on the neurological manifestations of HIV /AIDS amongst the African population and it is with this background that this retrospective study was carried out at the Ogun State University Teaching Hospital (OSUTH), Nigeria. The study aimed at evaluating the clinical spectrum and outcome of the neurologic manifestations amongst patients attending the HIV outpatient clinic and medical in-patients with AIDS.

METHODOLOGY

The case notes of all patients attending the HIV outpatient clinic and medical in-patients with AIDS were retrieved and reviewed from December 1992 to November 2002. Only patients living with HIV / AIDS who satisfied the under listed criteria were included in the study.

HIV screening was done by ELISA technique using Immunocomb and repeatedly reactive ELISA with 2 different kits was taken as confirmatory. Confirmatory test with Western blot, CD4 count and viral load were not done, as there were no facilities at the time of study. The results of full blood count and differentials, fasting sugar, ESR, VDRL, HBsAg, chest X–ray, sputum and stool microscopy, culture and sensitivity, mantoux test, CSF analysis, and other appropriate ancillary investigations done for indicator diseases were recorded.

Setting: OSUTH is situated in Sagamu; a semi-urban town with a population of about 200,000 (2002 census). Sagamu has a large cement factory and a major petroleum depot with its attendant vibrant trailer and tanker presence as well as a booming sex trade involving the tanker drivers and the locales. The hospital is a tertiary health facility serving all towns in Ogun state as well the adjoining parts of Lagos and Oyo states, and has 240 beds distributed amongst the various specialities with 40 in-patients beds for medical admissions; 20 for females and males apiece. The bases for admission are usually the acute care needs of patients, the need for highly skilled management and the severity of the patients' illness as well as suitability for teaching and research. Patients are admitted mostly through the accident and emergency department and medical out patient clinics. The community medicine and primary care department also runs an HIV outpatient clinic and patients were also admitted to the medical wards from this clinic whenever the need arose. Discharged patients were followed up in either the medical or HIV outpatient clinic as appropriate. The clinic attendees were mutually exclusive.

Treatment was symptomatic and specific treatment was administered for indicator diseases. Highly Active Anti-retroviral Therapy (HAART) was not used routinely at the time of study. However, a segment of the patients living with HIV / AIDS in the HIV clinics received HAART and formed part of another study (in press).

The Criteria for diagnosis were mainly clinical. Neuro-imaging techniques were not done as there were no facilities at the time of study.

Herpes zoster: Presence of a dermatomal / segmental rash and /or post-herpetic depigmentation and / or painful dysaesthesia. Carbamazepine / Amitryptilline was administered. Acyclovir was seldom used and Capsaicin was not available.

Tuberculous Meningitis (TBM): Features of subacute / chronic meningitis in the face of multiple cranial nerve lesions; with or without laboratory / radiological evidence of TB (pulmonary / extra pulmonary) and /or positive CSF culture for AFB and / or a xanthochromic CSF; and / or significant mantoux reaction or anergy; and / or elevated ESR.

Conventional short course Quadruple regime of anti-tuberculous medications for six months with prednisolone for the first 6 weeks of therapy were administered..

Vacuolar myelopathy (VM): Normal spine X- ray and typically "normal" or non-specific csf abnormalities with evidence of non-traumatic slowly progressive affectation of the posterior (impaired vibration, joint position sensation and positive Romberg's sign) and lateral columns (spastic paraparesis, gait disorder) with sphincteric dysfunction (erectile dysfunction in males) in the absence of a sensory level, or any other obvious cause of myelopathy. Presence of a discrete sensory level, spine tenderness or back pain, positive VDRL, or CSF pleiocytosis of greater than 30 cells / mm3 as well improvement with vitamin B 12 supplement raise suspicion of other causes. Serological test for HTLV 1, toxoplasma, serum level of B12, CSF level of S–Adenosyl Methionine (SAM) and Methionine), histopathological and neuroimaging studies (spinal MRI, CT scan myelography), and Somato-Sensory Evoked Potentials (SSEP) were not done.

Sub-acute Combined Degeneration of the spinal cord: Normal Spine X – ray with evidence of posterior and lateral column affectation, as well as peripheral neuropathy, and without sphincteric dysfunction. There could be accompanying beefy red tongue and / or anaemia and / or macrocytic blood film and possible clinical improvement with B12 supplement.

Toxoplasma encephalitis: Additional history of confusional state with irrational behaviour and seizures as well as clinical improvement with therapeutic trial of pyrimethamine and dexamethasone for medical decompression. There could be lateralising signs but usually without meningeal signs. Toxoplasma antibody levels – although inadequate - were not routinely done at the study center. Primary CNS lymphoma has a similar presentation except that there is absence of Toxoplasma antibody and lack of response to empiric toxoplasmosis treatment.

Cryptococcal meningitis: Features of subacute meningitis without laboratory / radiological evidence of TB and a positive response to anti-fungals (Diflucan / Amphotericin B). Cryptococcal antigen detection and or Indian – ink staining were not available.

Peripheral neuropathy – Six patterns are recognised :a) Distal symmetrical polyneuropathy (DSP); b) Inflammatory Demyelinating Poly neuropathy (IDP) ; c) Progressive polyradiculopathy (PP) ; d) Mononeuropathy multiplex (MM); e) Autonomic neuropathy (AN) ; f) Diffuse infiltrative lymphocytosis syndrome (DILS - presenting as Sjogren's syndrome). Nerve Conduction Studies, EMG and Nerve biopsy were not done.

DSP: glove and stocking dysaesthesia (burning distal acral dysaesthesia) with nocturnal exacerbations,

hypoesthesia, absent ankle jerks, contact allodynia and absence of any other obvious cause of peripheral neuropathy (diabetes, alcoholism, exposure to toxins or drugs including ARV, or excessive cassava consumption) and poor response to carbamazepine and gabapentin (neurontin).
IDP: diffuse weakness including facial musculatures, asymmetric in early cases; global areflexia and minor sensory signs. Typically occurs during seroconversion with resolution on neurovitamins + physiotherapy.
PP: flaccid paraparesis; saddle anaesthesia and sphincteric dysfunction
MM: multiple sensory / motor abnormalities.
AN: Sympathetic -: postural hypotension; syncope, diarrhea; anihydrosis;
Parasympathetic: resting tachycardia; impotence; urinary dysfunction.
DILS: conjuctivitis sicca –like presentation
Aseptic meningitis: Presence of meningeal signs with normal CSF.
AIDS dementia complex (ADC): Triad of cognitive, motor and behavioural dysfunction usually evolving within weeks to months. In early phase, concentraton and memory deficit, inattention, motor-incoordination and ataxia are common while in the late phase, global dementia with spastic paraplegia and mutism set in. Frontal release signs such as glabella tap and snout reflex may be present. The Mini-Mental Scale is usually insensitive, and Neuropsychological test such as HIV Dementia Scale (HDS) suggests subcortical dementia. The Memorial Sloan Kettering (MSK) scale was not available at the time of study.
Progressive Multifocal Leukoencephalopathy (PML): Progressive focal and cranial nerve deficits with cortical blindness. Patients are usually alert with no headaches, and cognitive dysfunction sets in very late. PCR of the CSF or brain biopsy was not done.
Statistics: Analyses of the patients' characteristics, clinical features and results of investigations were done by standard statistical methods and use of Epi-Info 6.04.

RESULTS

A total of 5,035 patients were reviewed, of which, 156 patients were seen at the HIV out-patient clinic and 4,879 were in-patients on the medical wards. Of the medical admissions, 206 (4.2%) were patients with AIDS, of which 93 (45 %) presented with neurological manifestations. Sixty-one out of the 156 (39.1%) out-patient attendees had neurological manifestations. Thus, a total of 362 patients with HIV / AIDS were reviewed, of which 154 (42%) had neurological manifestations and this formed the basis for this study. There were 86 males and 68 females giving a male : female ratio of 1.3 :1 (Table 1). One hundred and eleven (72%) were HIV I positive, 36 (23%) were HIV I and II, and 7 (5%) were HIV II positive. The age range was between 21 to 43 years with a mean of 32 + 3.6 years.
Of the 61 patients with neurological manifestations attending the HIV out-patient clinic, 45 (73%) had Herpes zoster, 10 (16.4%) had distal sensory polyneuropathy, 4 (6.5%) had inflammatory demyelinating polyneuropathy and 2 had subacute combined degeneration of the cord (Table 2). Of the 93 medical in-patients with neurological indicator diseases, 40 (43%) had Tuberculous meningitis, 19 (20.4%) had Vacuolar myelopathy, another 19 (20.4%) AIDS dementia Complex and 15 (16.1%) had Cerebral toxoplasmosis. (Table 3).
Of the overall 154 patients that presented with neurological manifestations, forty-five (29%) patients had Herpes zoster, 40 (26%) had TB meningitis, 19 (12%) had vacuolar myelopathy, another 19 had AIDS dementia complex, 15 (9.7%) had toxoplasma encephalitis, 10 (6.5%) had distal sensory polyneuropathy, 4 (2.6%) had inflammatory demyelinating polyneuropathy, and 2 (1.3%) had subacute combined degeneration of the spinal cord (Table 4).
Forty-four of the 45 patients (98%) with Herpes zoster presented with affectation of the thoracic dermatomes while only 1 had ophthalmic herpes. Forty had the T6 dermatome affected while two each had affectation at T8 and T8/9. All the patients had carbamazepine and amitryptilline with minimal relieve, and developed post herpetic neuralgia, skin depigmentation or hypertrophic scars.
Of the 40 patients with TBM, 32 (80%) had antecedent pulmonary disease, five (12.5%) had abdominal TB, and in three (7.5%), no focal TB lesion was identified (? cryptogenic). The CSF was xanthochromic in thirty-seven (92.5%) of them and normal in three (7.5%). They all had significant mantoux reaction above 15 mm. Thirty-one (77.5%) patients died before completion of anti-tuberculous medications and the remaining nine were stable albeit with neurologic sequelae (Table 5).
Two of the patients with AIDS Dementia Complex had serial seizures requiring anti-convulsants but all the patients died within 12 weeks of hospitalisation.
Of the 19 patients with vacuolar myelopathy, the blood film showed a megalocytic picture in 2 (10.5%) cases. One hundred percent mortality was recorded within 6 months of diagnosis.
All the patients with toxoplasma encephalitis remained alive and well.

All the patients with distal sensory polyneuropathy had poor response to carbamazepine and amitryptilline..All the patients with inflammatory demyelinating polyneuropathy had 7th cranial nerve palsies: three were unilateral while one was bilateral. They made full neurological recovery within 7 weeks of the onset of symptoms. The 2 patients with subacute combined degeneration of the spinal cord improved and remained alive.

DISCUSSION

About 42% of patients with HIV / AIDS presented with neurological manifestations in this study and this is comparable with reports that up to 30 –40% of PLWHA present with neurological manifestations ante-mortem (6,10). The neurological complications of HIV infection are highly stage-specific, and disease incidence rates depend on where the individual is on the course of the systemic HIV infection (2,3,8). Herpes zoster was the commonest neurological manifestations in those without indicator disease, followed by Distal sensory polyneuropathy and Inflammatory demyelinating Polyneuropathy. TBM was the commonest indicator disease in those with AIDS, followed by AIDS dementia complex, vacuolar myelopathy, and toxoplasma encephalitis.
In this study, herpes zoster ganglionitis was found in about 74% of out-patient attendees living with HIV and this is comparable with its predictive value of 71-98% for HIV sero-positivity (4). It tends to occur early in the course of the illness with good neurological recovery especially in young patients. The findings of post-herpetic neuralgia, skin depigmentation and hypertrophic scar in all the patients is therefore extremely unusual. It is plausible that the immunosuppressive state is contributory and the hypertrophic scars could be related to the high prevalence of Keloid in the black skin. The thoracic dermatome - T6 - was the predilection site in 98 % of the patients and only one case of ophthalmic herpes was found. No obvious explanation could be adduced for this observation in this study. HIV screening of all patients with herpes zoster is advised.
TBM was the commonest indicator disease in those with AIDS and a high index of clinical suspicion is needed for early institution of treatment and favourable outcome
No focal TB lesion was identified in 7.5% of the study subjects, and in another three (7.5%), the cerebro spinal fluid (CSF) was normal. The predisposing focus of infection in TBM could be cryptogenic in 15% of cases and normal CSF does not negate or exclude the diagnosis of TBM (6).
All the patients with TBM had significant mantoux reaction despite the expected anergy or immunosuppression. Although, the CD4 count was not done, no reason could be adduced for this observation in this report. It was however possible that some of the patients had an earlier mantoux test done before presentation.
All the patients with AIDS dementia complex and vacuolar myelopathy died within 6 months of onset of symptoms. This is consistent with mortality of 80% reported in such patients within 6 months of diagnosis (1,5). The overall fatality of 45% reported in this study portends neurological complications such as ADC, VM and TBM as high predictors of fatality. The distinction between VM and sub-acute combined degeneration of the spinal cord is of clinical relevance. The two patients with subacute combined degeneration of the spinal cord improved upon administration of hydrocobalamine. A very high index of clinical suspicion in PLWHA is necessary to ensure that such patients are identified and treated promptly.
As TB is endemic in our environment and BCG vaccination protects strongly against TBM (9), BCG vaccination of infants and unexposed individuals should continue to be a must in our environment. Furthermore, INH prophylaxis should routinely be used in our HIV population without overt evidence of TB.
Some neurological manifestations were not reported in the study. It is possible that this could reflect inadequate screening techniques or lack of necessary investigative tools such as Neuro-imaging techniques and PCR among others to corroborate the diagnosis. The shortcomings of a retrospective study and the highly selected group of patients could also be contributory.
In conclusion, our experience indicates that unusual neurological manifestations could be the first manifestation of HIV/AIDS. There is need for awareness of these entities by practising doctors for prompt diagnosis and treatment to reduce misdiagnosis and delayed reporting in our environment. Screening of patients with Herpes zoster for HIV as well as prophylactic use of INH in our HIV population without overt clinical / radiological TB is advised.

TABLE 1. HIV positive patients with Neurological manifestations

	No HIV+	No with AIDS(%)	Total	No with Neurological manifestations (%)	Males	Females
Medical admissions	0	206 (4.2)	206	93 (45)	57	36
HIV out-pt clinic	156	0	156	61 (39.1)	29	32
Total	156	206	362	154 (42.5)	86	68

TABLE 2. Neurological manifestations in HIV positive patients

Disease condition	No of cases (%)
Herpes zoster	45 (73.7)
Painful acral dysaesthesia	10 (16.4)
Mononeuritis multiplex	4 (6.5)
Subacute Combined degeneration of the Spinal cord	2 (3.2)
Total	61 (100)

TABLE 3. Neurological manifestations in Patients with AIDS defining illness

Disease condition	No of cases (%)
Tuberculous meningitis	40 (43)
Vacuolar myelopathy	19 (20.4)
AIDS Dementia Complex	19 (20.4)
Toxoplasma encephalitis	15 (16.1)
Total	93 (100)

TABLE 4. Neurological manifestations in patients with HIV / AIDS

Disease condition	No of cases (%)
Herpes zoster	45 (29)
Tuberculous Meningitis (TBM)	40 (26)
Vacuolar Myelopathy	19 (12)
AIDS dementia Complex (ADC)	19 (12)
Cerebral toxoplasmosis	15 (9.7)
Painful acral dysaesthesia	10 (6.5)
Mononeuritis multiplex	4 (2.6)
S. C. Deg. Of the cord	2 (1.3)
Total	154 (100)

TABLE 5. Relationship between fatality and Neurological diseases

Disease condition	Total	No of deaths	Case fatality / mortality (%)	P value
Herpes zoster	45	0	0	0
TBM	40	31	77.5	0.000 (S)
AIDS dementia Complex	19	19	100	0.000 (S)
Vacuolar myelopathy	19	19	100	0.000 (S)
Toxoplasma encephalitis	15	0	0	0: 00
Peripheral sensory neuropathy	10	0	0	o.oo
Inflammatory demyelinating Poly neeuro	4	0	0	o.oo
S.C. deg. of S.C.	2	0	0	o.oo
Total	154	69	45	

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ETUDES CLINIQUES / CLINICAL STUDIES

VALEUR LOCALISATRICE DES ONDES DELTA AU COURS DE L'EPILEPSIE TEMPORALE

THE LOCALIZING VALUE OF FOCAL DELTA SLOWING IN TEMPORAL LOBE EPILEPSY

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ABSTRACT

Background
Clinical and structural correlates of lateralized interictal delta activity in patients with temporal lobe epilepsy (TLE) have been well documented in the literature. Nevertheless, its occurrence has not been considered a significant clinical feature.

Objective
To evaluate the significance of focal delta- range slowing for localizing the epileptogenic focus in patients with TLE, and predicting the outcome of temporal lobe surgery.

Methods
Sixteen consecutive patients with temporal lobe epilepsy who underwent anterior temporal lobe resections were selected for the study. Findings of MRI, SPECT, neuropyschology assessment, pathology and surgical outcome were analyzed and correlated with focal delta slow activity of background rhythm.

Results
Twelve of 16 patients (75%) had localized temporal delta slowing corresponding to the resection site and pathology. Temporal delta slowing was the most frequent interictal EEG finding (75%) compared to spike and sharp wave (44%). MRI showed concordant abnormalities in 75% of the patients, and neuropyschology testing was able to lateralize the involved hemisphere in 37.5%. SPECT was concordant in 56%. There was no false localization with temporal delta activity. Slow wave EEG had a higher marginal probability than neuropsychological assessment of predicting the focus, and was equally effective as other investigative methods.

Conclusion
These results suggest that focal temporal delta slowing is useful in the localization of epileptogenic foci. There was no discordance with the resection site and pathology.

RESUME

Introduction
Les corrélations entre clinique, et topographie des ondes delta intercritiques au cours de l'épilepsie temporal (TLE) ont été bien documentées dans la litterature.

But
Évaluer la relation entre ralentissement delta et la localisation d'un foyer épileptogène dans le cadre d'une TLE et après une lobectomie temporale.

RESUME

Méthodes
Seize patients consécutifs atteints d'une épilepsie temporale qui ont bénéficié d'une lobectomie temporale ont été séletionnés. Les données IRM, SPECT, neuropsychologiques, neuropathologiques et l'évolution post-chirurgicale ont été analysées et correlées au foyer d'ondes delta.

Résultats
Douze des 16 patients (75%) avaient une correspondance entre les ondes delta, et la résection chirurgicale et l'anatomopathologie. Les ondes lentes delta temporales sont les anomalies les plus fréquemment rencontrées durant les périodes intercriques comparées aux spikes et pointes ondes (44%). La concordance entre l'IRM et les anomalies est notée chez 75% des patients ; les tests neuropsychologiques sont capables de déterminer la lateralisation de l'hémisphère impliqué dans 37% des cas. La SPECT était concordante dans 56% des cas. Il n'y avait pas de faux positif dans la localisation par l'activité temporale delta. Les ondes EEG lentes ont une plus grande probabilité localisatrice que les tests neuropsychologiques et sont aussi effectives que les autres méthodes

Conclusion
Ces résultats suggèrent que les ondes lentes temporales sont utiles dans la localization d'un foyer épileptique. Il n'y a aucune discordance entre le site de la résection et l'anatomo-pathologie.

INTRODUCTION

Resective surgery has proved to be an effective therapy for relief of intractable TLE [6,19,27,36]. Success in epilepsy surgery depends in large on the accuracy of pre-operative localization of the epileptogenic focus prior to cortical excision. This is primarily achieved by examining repeated preoperative electroencephalograph (EEG) studies, and additional independent data, which include clinical features of attack, evidence of localized brain dysfunction in neuropsychological assessment, regional hypo- perfusion demonstrated by SPECT, and structural lesions by MRI [17,28,45,46]. Congruence of data from all available parameters is crucial for seizure free outcome postoperatively.
Although irritative activity in an EEG is still considered to be a corner stone for localization of an epileptogenic focus, it is often the case that interictal spikes as well as the electrographic onset of seizures are widespread or bilateral [6,29,37,38,42].
The literature places little emphasis on the localizing value of EEG background rhythm disturbance. Engel and colleagues [16,18] describe several EEG criteria such as interictal spikes, thiopental activation of spike and fast activity and after-discharge-threshold determination, excluding background analysis. Focal delta slow waves on scalp EEG, either continuous and polymorphic or intermittent and rhythmic, are generally considered to be an indication of localized structural lesion involving cortical gray matter [24,47] or subcortical white matter [21]. Moreover, background abnormalities are occasionally observed in epileptic patients and considered evidence of nonspecific functional deficit resulting from underlying cerebral pathology [34,35]. In temporal lobe epilepsy without mass lesion interictal focal delta slowing was not related to the severity of epilepsy or to the neuronal loss of mesial temporal lobe structures. Koutrumanides [30] found a strong correlation between focal delta slowing and temporal lobe hypometabolism on FDG PET, suggesting a focal area of neuronal inhibition that can participate in interictal and ictal activity.
We wished to determine the significance of interictal focal temporal slowing in 16 consecutive patients who underwent diagnostic evaluation between 1993-1996 (University of Miami Epilepsy Program) to localize a resectable epileptic focus. All patients had a surgical resection of temporal epileptogenic cortical lesion. All patients had a regular follow up in the outpatient's clinic as part of the postoperative protocol. The value of interictal temporal slow delta activity on a surface EEG was examined and correlated with the results of other diagnostic procedures.

PATIENTS AND METHODS (p)

A cohort of 16 consecutive adult patients with TLE (9 males, ages between 23 and 49 years, and 7 females between 27 and 51 years), and a minimal follow up of 2 years after temporal lobectomy were included. All

patients had detailed inpatient video-EEG monitoring, MRI of the brain [12,13,26,33], SPECT (both postictal and interictal were reported as a single finding) [9,25,40,41,44], and neuropsychological assessment [11,23,32,43] before temporal lobectomy. Clinical informations obtained from the data base included patient age, sex, side of the epilepsy surgery, and pathologic diagnosis of resected tissue [8,15,31]. Treatment with anticonvulsants was continued postoperatively. Patient follow-up occurred at three-month intervals and included physical examinations and scalp EEG recordings. Surgical outcome was assessed based on Engel's classification, with class 1 representing freedom from disabling seizure (excellent results) and class 4 no worthwhile improvement (poor results).

Electrophysiological studies
All patients were monitored continuously with 24 hours EEG-Video monitoring using 64 channels Nicolet BMSI (Madison, WI) telemetry system. Scalp electrodes were applied according to international 10-20 System of placement. The patients had at least three seizures with clinical and electrographic evidence. All the EEG data were reviewed in our Neurophysiology laboratory (University of Miami). EEG analyses of awake and sleep record were based on visual observation to quantify periods of paroxysmal activities. The following elements were evaluated:

1.Ictal activity, defined as sustained rhythmic change in EEG activity preceding or coinciding with clinical seizure manifestation.

2.Interictal activity
a.Spikes and sharp waves
b.Brief periods of focal delta slowing not contaminated with postictal slowing (> 8 hrs. post seizure onset), spikes or artifact.

Multiple occurrences of focal delta slowing of background rhythm lasting more than 5 seconds were considered significant for analysis. Records were considered positive if more than five epochs of focal temporal delta slow activity were noted.
Statistical Analysis
For each patient in the study, two binary variables (detect/no detect; cure/no cure) were recorded for each of the diagnostic methods (slow wave EEG, MRI, SPECT, Neuropsychological Testing). For patients in whom lesion removal did not result in a cure (i.e., Engel class 1 outcome), the outcome was recorded as a "no cure".
Since several diagnostic methods were recorded for each patient, repeated measures were utilized when comparing the effectiveness of diagnostic tests. Fisher's exact test, evaluating marginal homogeneity of dependent data, was conducted to test whether diagnostic methods were equally effective in predicting a cure. Additionally, simple diagnostics, such as sensitivity and specificity, and logit models with diagnostic method as independent variable were employed to study the relationship between the response variable and each of the diagnostic tests.

RESULTS

All sixteen patients underwent surgery. Nine patients had a right and seven had a left anterior temporal lobectomy. All patients had postoperative follow up ranging between two to five years. Twelve patients were seizure free more than 2 years following surgery. Nine out of 12 patients (75%) had focal temporal delta slowing concordant with the resection site, indicating a high predictive value of focal temporal slowing for good surgical outcome (class 1).
Electrographic Data. A scalp EEG was analyzed for both interictal and ictal changes at the time of onset of clinical seizure during EEG video monitoring, and for a buildup of sustained rhythmic discharges. Localized ictal and interictal EEG changes (i.e., focal temporal spikes) were observed in seven of the 16 patients (44%). All were concordant with the resection site and pathology results. Four patients had bilateral electrographic onset, and for three of these 4 patients intracranial EEG recordings were obtained to determine a single focus.
Focal temporal delta slowing, ipsilateral to the resection site, was noted in twelve patients (75%). Nine of the 12 patients with temporal delta slowing had class 1 outcome (75%). It is important to note that only seven of them had combined focal delta slowing and interictal spikes concordant with resection site.
MRI. Evidence of unilateral temporal lobe pathology, ipsilateral to the resection site, was noted on the brain MRI of twelve patients (75%) in the form of increased hippocampal signal on T2 weighted images or

hippocampal formation atrophy. Nine of them showed focal delta slowing. Six out of these 9 (66%) were seizure free. MRI was normal in 4 patients for whom scalp EEG failed to provide lateralizing information. In these 4 patients, pathology reported mild gliosis and few ectopic neuron (n = 2), no specific changes (n = 1), and mesial temporal sclerosis (n = 1). Three of the 4 patients with normal MRI exhibited focal delta slowing concordant with resection site (75%) and were seizure free.

SPECT. Qualitative visual analysis of SPECT images disclosed unilateral regional activity concordant with the resection site in nine patients (56%). Three patients had contralateral results and 4 reported as normal. Six out of 9 patients (66%) with positive SPECT had concordant focal temporal delta slowing.

Neuropsychological Tests. Detailed neuropsychological testing was conducted in all patients. For the purpose of our current analysis, only final conclusions of the neuropychology assessment in regard to lateralization were considered. Neuropsychology tests correctly lateralized the epileptogenic focus in six patients (37.5%). For three of 16 patients (19%) neuropsychological testing failed to report lateralization, even though two patients had a clear seizure focus, one in the left temporal lobe and one in the right. False lateralization was obtained for one patient with bilateral onset and diffuse slowing.

In addition, WADA tests were performed a) to evaluate hemisphere dominance in 3 left-handed patients; b) because 2 patients had bilateral ictal onset; c) because 2 patients had diffuse cognition impairment during neuropsychological testing; and d) because 2 patients had verbal and language deficits accompanied by seizure onset in the left temporal lobe.

Pathology. Brain tissue samples of sixteen patients were available for review. Eight specimens (50%) revealed mesial temporal sclerosis (MTS) on routine pathological examination. Six of the 8 patients (75%) exhibited focal delta slowing in EEG recordings. In four specimens few ectopic neuron, minimal gliosis, and old scar with gliosis (a cortical cicatrix) were noted. Three of the 4 patients with gliosis exhibited concordant focal delta slowing. One specimen showed a dysembryoplastic neuroepithelial tumor. In the three remaining specimens no significant changes were observed. However, two of these 3 patients had focal delta slowing. Comparing the brain tissue pathology with the possible risk factors identified in the patients' history, four cases of MTS were associated with head trauma and three cases with febrile illness; one case was cryptogenic in etiology. Cortical cicatrix was associated with herpes encephalitis. In two cases of cryptogenic etiology and in one case with head trauma no specific changes were observed in the brain tissue pathology. Two cases of minimal gliosis and few ectopic neurons were associated with cryptogenic etiology.

Statistical analysis (p)

The first goal of this study was to determine whether a Slow Wave EEG had the same probability of predicting a positive outcome as the other diagnostic tests. The marginal probability of a positive outcome based on Slow Wave EEG was compared with the marginal probability of a positive outcome based on each diagnostic test separately. Because of the within-subject design, explicit account was taken of the dependence between the variables.

Slow Wave EEG has a higher marginal probability than neuropsychological evaluation in predicting a cure ($p = 0.1$) and is otherwise equally effective as other methods. It is important to note that the probability value for slow wave EEG versus MRI is 1.0. This suggests that Slow Wave EEG and MRI are equally effective (table 1). In general, there is strong agreement between the two tests and when discordant diagnoses occur the differences are due to random variation.

Sensitivity and Specificity. In general, sensitivity was relatively high for all diagnostic tests. As shown in table 2, slow wave EEG has the highest sensitivity and specificity of any of the diagnostic tools. Sensitivity would be even higher if we excluded cases in which removal of a lesion did not result in a cure. The poor specificity of the diagnostic tests was due to instances for which a lesion removal (detected by other means) resulted in a cure. As an example, all four patients for whom MRI failed to detect a lesion were cured because the lesion was detected by other diagnostic tests. By way of comparison, pathology had a sensitivity of .77 and a specificity of .33.

Logit Model. The second goal was to investigate how likely it was for a cure (seizure freedom) to occur when a lesion was detected as compared to undetected by a single diagnostic measure. The Logit Model analysis suggested that none of the diagnostic tests were effective in predicting a cure (table 3). For example, a cure was equally likely to occur when a lesion was detected (75%) or undetected (75%) by the slow wave EEG recording. The Logit Model analysis is hampered by the small number of negative outcomes reported for the diagnostic tests reflected in the poor specificity of the tests. Note that the MRI had no true negatives and hence a Logit Model analysis was not possible for this diagnostic tool.

DISCUSSION

Accurate localization of the epileptogenic focus is essential prior to surgical treatment for intractable epilepsy

[6,17,19,27,28,36,45,46]. In our study, focal temporal delta slowing has been shown to be of great value for seizure localization (75%). This finding of temporal delta slowing of background rhythm is highly correlated with MRI (75%) and SPECT (56%). Also, our study has shown a good surgical outcome (i.e., seizure free) in patients with ipsilateral temporal delta slowing and ipsilateral spikes and sharp waves in their EEG recordings. This indicates that, in patients with temporal lobe epilepsy (TLE), the evaluation of background abnormalities is valuable in localizing the epileptogenic focus.

The neurophysiological mechanisms responsible for the generation of focal delta slowing in TLE are not clear. The observation of a coincidence between spikes and intermittent delta activity suggests that the region of the brain responsible for epileptic discharges may also produce pathologic slow waves in the scalp EEG. Ajmone- Marsan [4] emphasized that, in epileptic patients, nonspecific slow transients or even subcontinuous slow waves may often be the expression of functional changes reflecting an epileptogenic process. Further evidence of this hypothesis was provided by previous studies with simultaneous scalp and an intracranial recording (extradural, sudural and depth electrodes) [1,2,3,5,7]. On the basis of these simultaneous scalp and depth recordings, epileptiform patterns recorded by intracranial electrodes appeared less likely to occur in the surface reflection of the scalp EEG recording. However, some of the scalp recordings appeared as typical epileptiform discharge, mainly in the form of slow transient. Specific factors determining whether an epileptiform discharge will appear at the scalp with typical morphology or in the form of slow transients have not been identified.

The stability of polymorphic delta activity has been investigated utilizing intracerebral electrodes. No significant day-to-day changes in background activity have been shown even though spike and seizure frequency fluctuated [22]. Dally [14] showed that, in general, sleep does not affect the stability of polymorphic delta activity. These results emphasize the stability of background activity in contrast to the unpredictable occurrence of spikes and seizure, enhancing the value of focal delta slowing of background rhythm as a diagnostic tool.

Reiher et al [39] reported that temporal intermittent rhythmic delta (TIRDA) is an accurate indicator of partial seizures. Their study sample consisted of 115 consecutive patients with a clinical diagnosis of complex partial seizures, without identification of the location of the epileptogenic zone. No patients exhibited evidence of clinical seizures activity during run of TIRDA and the TIRDA generally occurred ipsilateral to unilateral temporal spikes. Some of their patients had extratemporal lobe epileptiform discharge. Over all our results support their conclusion which suggested that TIRDA is an indication of temporal lobe seizure. Although our series included morphologies of delta activity other than the characteristic TIRDA, on many occasions focal delta slowing was indeed TIRDA.

Our results were in overall agreement with Gambardella et al [20], who reported that trains of delta waves over temporal regions were observed in >90% of patients with mesiotemporal atrophy assessed by volumetric MRI. In contrast, Bernasconi et al [10] correlated volumetric MRI and MRS of the temporal lobe with interictal focal delta activity in 34 TLE patients and 10 controls. They reported no significant difference in the amount of delta activity in temporal lobe between the controls and patients, nor did they find a correlation between delta activity and neuroimaging measures. Delta activity was not explained by reduced volume of temporal lobe white matter, gray matter, or by abnormalities seen in MRS. Although our study did not include volumetric MRI or MRS, a striking concordance was observed between focal delta activity and the epileptogenic focus. Several of our patients with a normal MRI exhibited focal delta activity, supporting the notion that focal temporal delta activity should be conceptualized as a distinct electrographic phenomenon, directly related to epileptogenic abnormality.

With regard to the follow up of our patients, twelve were seizure free (class 1) more than 2 years following surgery, and nine of them (75%) showed presurgical temporal delta slowing concordant with resection site. In seven patients (58%) ipsilateral spikes/sharp waves were observed in addition to the focal delta slowing. In conclusion, our results strongly suggest that focal delta slowing of background rhythm over the temporal lobe is a reliable and accurate indicator of an epileptogenic focus and ranks equal in accuracy with other standard diagnostic tests and therefore should be included among EEG criteria during standard preoperative evaluation of epilepsy patients.

Table 1. Fisher's Exact Test Comparing Marginal Probability of Detecting a Lesion for Slow Wave EEG versus other Diagnostic Methods

Slow Wave EEG versus	P-value
SPECT	0.2370

Table 1. Fisher's Exact Test Comparing Marginal Probability of Detecting a Lesion for Slow Wave EEG versus other Diagnostic Methods

MRI	1.000
Neuropsychology	0.0123
Pathology	0.6527

Table 2. Sensitivity (Probability of Positive Outcome Given Lesion Detection) and Specificity (Probability of Negative Outcome Given No Lesion Detection) for Diagnostic Tests

Diagnostic	Sensitivity	Specificity
EEG	.75	.25
SPECT	.67	.14
MRI	.67	0
Neuropsychology	.67	.20

Table 3. Logistic Analysis of Probability of a cure. The independent variable is the binary outcome (detect/no detect) of the diagnostic test

Diagnostic	P-value
Slow Wave/EEG	1.000
SPECT	0.3948
MRI	no test possible
Neuropsychology	0.5544

Table 4. Slow wave EEG by outcome

Slow Wave EEG	Negative Outcome	Positive Outcome
Negative	1	3
Positive	3	9

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ETUDES CLINIQUES / CLINICAL STUDIES

CHIRURGIE DES MÉNINGIOMES INTRACRÂNIENS DANS UNE UNITÉ NEUROCHIRURGICALE DE DAKAR

EXPERIENCE OF SURGERY OF INTRACRANIAL MENINGIOMAS IN A NEUROSURGICAL UNIT AT DAKAR

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RÉSUMÉ

Objectifs
Rapporter notre expérience sur la chirurgie des méningiomes intracrâniens à Dakar .

Méthode
Les auteurs rapportent une série rétrospective de 24 patients porteurs de méningiomes intracrâniens opérés dans une unité neurochirurgicale différente de notre institution mère à Dakar . Le recrutement s'est fait de Janvier 2001 à Juillet 2004. L'évaluation diagnostique a reposé essentiellement sur la tomodensitométrie cérébrale et l'anatomo-pathologie.

Résultats
Il s'agissait de 17 femmes et de 7 hommes. L'âge de nos patients variaient entre 21 et 77 ans avec un pic de fréquence à 55 ans . Le syndrome d'hypertension intracrânienne et la comitialité ont été les circonstances diagnostiques les plus fréquentes avec un taux de 37%. La tomodensitométrie cérébrale a permis d'évoquer un diagnostic présomptif de nature. Concernant la topographie, les méningiomes de la convexité ont été observés dans 50% des cas suivis par les méningiomes de la base (20%). L'évaluation de la qualité de l'exérèse chirurgicale selon le grading de Simpson a retrouvé 20% de grade I et 64% de grade II. L'insuffisance du plateau technique et le manque de compétences en neuroanesthesie rendent compte de la mortalité post-opératoire de 12%.

Conclusion
Ce travail nous permet de proposer une stratégie d'amélioration de la pratique neurochirurgicale tumorale en Afrique subsaharienne.

ABSTRACT

Objective
To report our experience of intracranial meningiomas surgery in Dakar.

Method
We analysed a population of 24 patients who underwent operation in a Neurosurgical unit different from our mother Institution. Brain CT scan has been done for every patient and histopathological confirmation has been reached for all patients.

Results
Regarding sex, we have 17 females for 7 males. The patient age was between 21 and 77 years old with a mean of 55.Intracranial hypertension and seizures were the main symptoms encountered with 37% for each. Our diagnostic evaluation is based on CT scan which showed 50% of convexity meningiomas and 20% basal one .By using Simpson grading to assess the quality of surgical resection ,we found 64% of grade II and only 20% of grade I.A 12% of postoperative death rate is related on the substandard medical set and the lack of neuroanesthesists.

Conclusion
We outlined a program to improve the neurosurgery practice in Sub-Saharan countries.

INTRODUCTION

Les méningiomes intracrâniens se définissent comme des tumeurs bénignes développées aux dépens des cellules méningothéliales de l'arachnoïde. Actuellement dans les pays du Nord les progrès enregistrés en neuro imagerie, la sophistication de l'instrumentation chirurgicale et surtout une meilleure connaissance de l'anatomie microchirurgicale, et les avancées en anesthésie réanimation permettent une exérèse macroscopiquement complète de la majorité de ces lésions quelque soit le siège. Comme conséquences, la mortalité et morbidité sont quasiment nulles (5)
Ces conditions de pratique neurochirurgicale sont loin d'être réunies dans la plupart des pays subsahariens auxquelles appartient le Sénégal. En effet, les difficultés d'accès aux soins de nos populations, le manque aigu de neurochirurgiens et surtout la présence d'un plateau technique insuffisant caractérisent la neurochirurgie subsaharienne. Cette série opératoire de 24 cas de méningiomes intracrâniens nous permettra d'aborder les problèmes inhérents à la prise en charge de telle lésion en situation que l'on pourrait qualifier d'exception.

MATÉRIEL ET MÉTHODES

Nous avons effectué une étude rétrospective des méningiomes intracrâniens opérés dans une unité neurochirurgicale sise à l'hôpital Grand Yoff de Dakar. Cet hôpital est éloigné de 5km de notre institution mère qu'est le Service de Neurochirurgie du CHU de Fann. C'est ainsi que de janvier 2001 à Juillet 2004, nous avons colligés 52 malades opérés de tumeurs cérébrales et parmi celles-ci nous avons extraits les dossiers correspondant au diagnostic anatomopathologique de méningiomes. En dernière instance, n'ont été retenus que les patients ayant un dossier clinique complet avec surtout une tomodensitométrie cérébrale. Aucun de nos malades n'a bénéficié d'une angiographie cérébrale pour non disponibilité d'un appareil à Dakar.

RÉSULTATS

Nous avons ainsi retenu 24 patients porteurs de méningiomes intracrâniens opérés pour 20 patients porteurs de gliomes cérébraux, 6 médulloblastomes et 2 patients pour lesquels le diagnostic était indéterminé.
Il s'agit de 17 femmes et de 7 hommes correspondant à un sexe ratio 2,4/1.
L'âge de nos patients se distribue entre 21 et 77 ans avec un pic de fréquence à 55 ans .Sur le plan clinique on constate la présence constante de céphalées diffuses. Le syndrome d'hypertension intracrânienne (HIC.)

manifeste a été constaté chez 9 patients soient 37%. Une comitialité a été notée au même taux que l'HIC. A l'examen clinique, 16 patients soit 70% de nos patients présentaient un déficit hémicorporel. 4 de nos patients avaient une bosse crânienne et 1 présentait une exophtalmie unilatérale. Chez aucun de nos patients, il n'a été fait mention à l'examen général de la présence de stigmates de neurofibromatose.
L'imagerie diagnostique a été pratiquée à l'aide d'une tomodensitométrie cérébrale avec et sans injection en coupes axiales de 3 ou 5 mm et 10 patients ont complété leur examen par une reconstruction sagittale ou coronale. Une image caractéristique de méningiome sous forme d'image spontanément dense et rehaussée d'une façon homogène par l'injection de produit de contraste a été retrouvée chez tous nos patients. Aucun de nos malades n'a bénéficié d'une angiographie préopératoire. Le scanner cérébral nous a permis néanmoins de classer les lésions selon le siège. (Tableau n°1)

Le bilan pré opératoire n'avait révélé aucune pathologie sous jacente majeure pouvant poser une contre indication opératoire formelle : un de nos malades avaient un diabète non insulinodépendant bien équilibré et deux de nos patients avaient des antécédents d'infarctus du myocarde.

Habituellement, une corticothérapie générale à base de tetracoside est toujours instituée dés que le diagnostic de tumeur cérébrale est évoque par la tomodensitométrie.
Comme instrumentation d'exérèse nous disposons d'une coagulation bipolaire et d'une anse coagulante et comme adjuvant hémostatique de la cire de Horsley et des tampons hémostatiques. La magnification optique est assurée par des lunettes grossissantes. L'anesthésie est générale, et juste avant l'ouverture durale un 'flash' de 150 ml de mannitol à 20% est effectué. Une transfusion iso groupe iso Rh est effectuée si le besoin se fait sentir, en moyenne pour chaque malade est prévu avant intervention 1,500 litres de sang.

La qualité de l'exérèse chirurgicale a été appréciée en utilisant le grading de SIMPSON (tableau n° 2)

L'examen anatomopathologique de la pièce opératoire nous a permis de faire une classification histopathlogique en 14 méningiomes méningothéliaux, 9 psammomateux et 1 angioblastique.

L'étude de l'évolution post-opératoire a été réalisée avec un recul de 3 mois à 4 ans. Un de nos patients a récidivé de son méningiome para sagittal opéré 3 ans auparavant dans notre institution mère par l'auteur senior.
Nous avons noté une mortalité post opératoire (période des 30 jours post-opératoires) de 12% correspondant à 3 décès : le premier patient a présenté des complications hémorragiques post-opératoires i, et les 2 autres patients avaient dans leurs antécédents une notion d'ischémie myocardique.
14 de nos patients ont récupérés complètement de leur déficit moteur. 2 présentaient un déficit mineur n'entraînant pas une perte d'autonomie et 3 patients continuaient à prendre un traitement anti comitial pour une épilepsie séquellaire.
Le contrôle scanner post opératoire (fig. 1l n'a pu être réalisé que chez 12 patients : 1 patient avait un petit résidu tumoral non évolutif 3 ans après intervention pour méningiome de la faux tiers moyen (figure 2) et chez un autre patient opéré d'un volumineux méningiome clinoïdien, on notait la présence d'un résidu tumoral au contact de la paroi latérale du sinus caverneux droit (fig.3).

DISCUSSION

De nombreux de travaux ont été déjà consacrés aux méningiomes intracrâniens, dans les pays du Nord (5) et l'intérêt des neurochirurgiens s'oriente surtout vers la compréhension de la biologie et vers l'affinement des techniques d'exérèse chirurgicale.
Les études en Afrique sont parcellaires (1,2) et elles souffrent particulièrement d'insuffisances méthodologiques liées à leur caractère rétrospectif et surtout aux conditions limitées de la pratique neurochirurgicale.
L'étude de cette série opératoire de 24 malades, montre que le méningiome intracrânien est la tumeur cérébrale la plus fréquemment rencontrée par rapport aux autres entités histologiques au Sénégal : 24 méningiomes pour 20 gliomes.
Cependant, on pourrait évoquer un biais de recrutement. En effet certains patients porteurs de gliome seulement biopsiés par trépano-ponction ont été exclus de cette étude.
En fait, depuis la publication princeps de Cushing et Eisenhardt (in 4, 7), la plupart des travaux placent les méningiomes après les gliomes avec une fréquence variant selon les séries de 13,4 à 20%. Au Ghana N.B.Andrews arrive à la même conclusion (1). Percy et coll. (11) rapportent un taux de 38% qui constitue la

fréquence la plus élevée en Occident. Une revue de la littérature faite récemment par F De Monte et coll.(5) relève une fréquence assez élevée de cette lésion chez les mélanodermes par rapport aux caucasiens. En effet, elle montre une moyenne de 30,1% à travers les études africaines pour 21,4% dans les études européennes.
Le méningiome est une tumeur de la cinquantaine (2,7) et apparaît comme la tumeur cérébrale la plus fréquemment retrouvée (38%) lors des autopsies systématiques de patients décédés d'une pathologie autre (16). Ces méningiomes de découverte fortuite, « fortuitomes » ou « incidentalomes », souvent asymptomatiques ont été retrouvés par Krampla et coll. (8) lors de la réalisation systématique de MRI chez des sujets âgés de plus de 75 ans.
Le sexe ratio en faveur de femmes observé dans notre étude, est en adéquation avec les données de la littérature. Il a été démontré récemment que des récepteurs hormonaux à progestérone, détectés dans 70% des cellules méningiomateuses (14) pourraient constituer le site éventuel d'un antagoniste la mifepristone pour inhiber la croissance tumorale.

L'étude de notre série ne révèle aucun facteur étiologique particulier telle l'existence dans les antécédents d'un traumatisme crânien ou la notion d'une irradiation ; le rôle des radiations ionisantes dans la genèse des méningiomes a été bien démontré chez les personnes ayant reçu une radiothérapie pour certaines teignes et chez les survivants japonais de la bombe de Hiroshima et de Nagasaki (17)
L'implication de facteurs viraux est difficile à attester. Aucun de notre patient ne présentait des stigmates de phacomatose ; un contexte neurofibromatose surtout la forme NF2 favorise l'apparition de méningiomes, la perte d'un gène suppresseur au niveau du chromosome s 22 a été incriminée (5)
Les circonstances de découverte ne sont pas univoques soit il s'agit d'un syndrome d'hypertension intracrânienne ou des convulsions inaugurales qui rendent compte du caractère extra parenchymateux et cortical de cette lésion. Cette comitialité a été surtout décrite chez les patients porteurs de méningiomes para sagittaux et de la faux (15). Notre étude montre un résultat global de 37% de comitialité sans préjuger du siège. Chan et Thompson (4) rapportent un taux de 46% d'épilepsie préopératoire. Les méningiomes para sagittaux et de la faux étant les plus épileptogènes.
Bien que n'ayant pas effectué une quantification volumétrique de ces méningiomes au scanner ou en périopératoire, nous pouvons dire que le volume souvent important de cette lésion doit être mis sur le compte de l'extrême tolérance et adaptabilité du parenchyme cérébral à un processus occupant bénin d'évolution lente (slow growing lesion).
Habituellement, les méningiomes de l'étage antérieur du crâne se caractérisent par leur volume important. En effet le caractère insidieux dans l'installation des troubles des fonctions supérieures fait que l'entourage s'inquiète rarement outre mesure.
La présence d'une bosse crânienne chez un de ces patients est révélatrice d'une invasion osseuse avec parfois une extériorisation. En 1999, Badiane et coll. ont rapporté 11,4% de méningiomes dits extériorisés (2).
L'exophtalmie constatée chez une de notre patiente est liée à l'invasion du sinus caverneux ipsilateral par le processus méningiomateux. Cette exophtalmie est parfois rencontrée en cas d'extension intra orbitaire d'un méningiome clinoïdien (5) ou sphénocaverno orbitaire de Bonnal ; en dernière instance on pourrait parfois évoquer une hyperostose de la paroi latérale de l'orbite dans certains méningiomes en plaque.
Notre approche diagnostique est essentiellement basée sur la tomodensitométrie cérébrale qui a permis chez tous nos patients un diagnostic présomptif de nature devant la présence d'une lésion spontanément iso dense ou légèrement hyperdense associée à un rehaussement important à l'injection d'un produit de contraste. L'existence d'une réaction osseuse adjacente apporte un argument supplémentaire quant à l'origine méningée de la lésion.
Notre étude révèle sur le plan du siège une plus grande fréquence des méningiomes de la convexité par rapport aux méningiomes para sagittaux et de la faux, alors que dans la plupart des publications l'ordre est inversé car la région para sagittale est la zone la plus riche en granulations de Pacchioni (origine de la croissance tumorale).
Quand il s'agit d'apprécier la définition spatiale et les rapports anatomiques neurovasculaires que nous qualifierons de critiques (sinus caverneux, polygone de Willis, nerfs crâniens, sinus veineux duraux), il est incontestable que l' Imagerie Résonance Magnétique (I.R.M.) surclasse le scanner (5). L'angio IRM par la qualité des images vasculaires qu'elle offre a rendu presque inutile l'évaluation diagnostique systématique des méningiomes par l'angiographie dont l'indication se limite à celle de l'embolisation. Cette angio IRM permet d'étudier l' angio structure durale et piale, la richesse vasculaire, l'existence ou non d'un déplacement vasculaire ou d'un engluement artériel sans infiltration (encasement des anglo-saxons) et surtout celle d'apprécier le degré de liberté des gros sinus veineux
En 1999, 90% de nos patients porteurs de méningiomes ont été diagnostiqués par l'angiographie cérébrale et seul 1 patient a été embolisé. La non disponibilité actuelle de cet appareil à Dakar explique qu'aucun

malade de cette présente série n'ait été embolisé et cette situation rend compte du caractère souvent hémorragique de la chirurgie d'exérèse des méningiomes au Sénégal. Les bénéfices de cette embolisation préopératoire sont liés au fait qu'elle transforme une lésion hyper vasculaire en une néoformation nécrotique centrotumorale avasculaire (12).
Il est évident que les progrès enregistrés en microchirurgie et en chirurgie de la base du crâne avec la mise au point de la technique d'abord extra durale première (pour dévascularisier le méningiome de son apport vasculaire du réseau externe) et intra durale (pour disséquer le méningiome des artères du polygone) tendent à limiter de façon considérable les pertes hémorragiques.
La chirurgie d'exérèse constitue l'axe central de la stratégie thérapeutique en matière de méningiome intracrânien, dont le but est d'assurer la suppression de l'effet de masse sans traumatiser le parenchyme cérébral, et la prévention de la récidive par l'éradication de tous les îlots supposés de méningiomes.
Actuellement, il existe un consensus global quand la prédictibilité pronostique de la qualité de l exérèse chirurgicale (grade de Simpson). Plus l'ablation de la lésion est complète plus le pronostic fonctionnel et vital est meilleur (in 5) .19/24 de nos patients ont bénéficiés d'une exérèse grade 1 ou grade 2 de Simpson. Il faut dire que la qualité de l'exérèse chirurgicale dépend surtout du siège de la tumeur, des moyens techniques dont on dispose et en dernière instance de l'expérience du chirurgien. Les lésions qui siégent au niveau de la convexité sont les plus accessibles chirurgicalement et peuvent ainsi bénéficier d un grade 1 sans une quelconque morbidité ou mortalité.
Le principe du 'primum non nocere' doit être la règle. Il s'appuie sur un repérage pré opératoire le plus précis possible de la lésion. En l'absence d'appareil de neuronaviguation dans nos pays, nous devrons insister auprès de nos collègues neuroradiologues pour obtenir des images fines avec reconstruction coronale ou sagittale et surtout un topogramme crânien. L'objectif poursuivi serait d'éviter les volets mal centrés sources d'hémorragie supplémentaire. Deuxième élément, la gestuelle chirurgicale doit être douce et atraumatique pour ne pas léser le cortex cérébral, les artères du polygone de Willis et surtout les grosses veines de drainage avec le risque catastrophique d'infarcissement veineux.
L'utilisation du microscope opératoire est un impératif absolu. L'intérêt du bistouri ultrasonique est fonction de la consistance de la tumeur ; intéressante lorsqu'elle est molle mais sans intérêt dans le cas contraire.
Bien que nos résultats soient encourageants sur le plan de la morbidité (comitialité post opératoire, 3 cas et déficit moteur séquellaire, 2 cas), nous devons bannir cette tendance que nous avons à procéder à une exérèse « en bloc » du méningiome par traction ou énucléation sans dissection préalable de tous les pôles qui aurait permis d'individualiser et de préserver les structures 'neurovasculaires critiques'. Il faudrait s'attacher à réaliser une résection intra-capsulaire ('debulking') avant de disséquer la paroi capsulaire accolée ou engluant les ces derniers. D'où l'intérêt de la planification préopératoire.

La prise en charge des méningiomes de la base participe encore plus à ces impératifs déjà édictes, il s'agira surtout de minimiser l'écartement cérébral par l utilisation d un abord chirurgical le plus direct et le plus large possible (volet bi frontal avec ou sans dépose orbitozygomatique)
L'entraînement sur cadavre est à conseiller, il permet au chirurgien d'acquérir les bases anatomiques de ces techniques de dépose osseuse et de cheminement à travers les citernes de la base. En outre, nos anesthésistes devraient maîtriser les techniques de détente cérébrale (utilisation de furosémide, de mannitol a 20% en flash ; drainage lombaire péri opératoire) La spécialisation en neuroanesthésie devrait être promue en Afrique.
Badiane et coll. à Dakar rapportaient en 1999 une mortalité post opératoire de 38%. Cette mortalité a diminué de plus de la moitié dans cette présente étude (12 %). Cette diminution doit être mise sous le compte de l'accessibilité du scanner et surtout d'un gain d'expérience de nos collègues anesthésistes en matière de pathologie neurochirurgicale. Certes, la mortalité reste toujours élevée. Gombini (6), en Italie dans les années 80, l'estimait à 3%. Dans les séries les plus récentes en Occident, la morbi -mortalité est presque nulle (5). Les présupposés neurochirurgicaux que nous avons déjà évoqués sont les déterminants les plus cruciaux de cette amélioration.
Concernant les récidives, un de nos patients ayant bénéficié d'une résection tumorale grade 3 de Simpson 2 ans auparavant, a récidivé de son méningiome para sagittal. En fait, la notion de récidive dans ce cas est sujette à caution car il faudrait plutôt parler de reprise tumorale d'une lésion résiduelle.
Pour Phillipon (10), la récidive devrait s'apprécier à partir de la cinquième année d'évolution post opératoire. Globalement, elle est de 7 % avec une tendance à s accroître avec le temps. Elle est particulièrement corrélée au Grade de Simpson. Des méningiomes de la convexité malgré leur Grade I de Simpson de résection ont récidivé (10).L'explication la plus plausible pourrait résider dans l'hypothèse de multicentricité régionale énoncée par Borovich et coll (3).Ces auteurs ont démontré par des études anatomo-pathologiques systématiques de la dure-mère de méningiomes opérés, la présence à 3 cm de la zone d'insertion et de manière isolée, d'îlots de cellules méningothéliales. Ce constat doit inciter à réaliser une résection durale la plus large possible, avec plastie secondaire en utilisant de l'épicrâne ou du fascia lata.

Les méningiomes de la base avec un grade II récidivent dans 23 % selon l'équipe de Ossama el Mefty (9). Les méningiomes malins qui correspondent au stade 3 et 4 de l'O.M.S. dont l'incidence est de 7% selon Salcman (13) ont une forte tendance à récidiver et à donner des métastases extra nevraxiques. Les formes papillaires des méningiomes rencontrées surtout chez les enfants et les formes angioblastiques qui posent parfois des problèmes nosologiques avec l'hémangioperycitome, partagent le même pronostic que les méningiomes malins.

CONCLUSION

L'étude de cette série de méningiomes intracrâniens opérés à Dakar bien qu'elle montre une amélioration notable du pronostic par rapport aux travaux locaux antérieurs, reste passable par ses résultats opératoires quand elle est comparée aux séries occidentales. L'état embryonnaire dans lequel se trouve actuellement la pratique neurochirurgicale en Afrique subsaharienne en est une explication. Nous nous devons de plaider auprès des décideurs politiques sur l'urgence d'acquérir des moyens diagnostiques et une instrumentation chirurgicale de base adéquats. Une politique soutenue de formation en neurochirurgie et en neuroanesthesie doit en outre être la règle.

Tableau n°1 : Répartition des méningiomes selon le siège.

Variété selon le siége du méningiome	Nombre de cas identifiés au Scanner		
Méningiome de la convexité	12		
Méningiome de la base	5	méningiomes olfactifs 3	
		petite aile du sphénoïde 2	pterion 1
			clinoïdien 1
Méningiome para sagittal	4		
Méningiome de la faux	2		
Méningiome du cervelet	1		

Tableau n° 2 : Grading de SIMPSON

Qualité de l'exérèse chirurgicale selon SIMPSON (in Phillipon)	Nombre de cas
Grade 1 : résection complète de la lésion dure mère et os anormale comprise	5
Grade 2 : résection complète avec coagulation base durale	14
Grade 3 : résection sans coagulation base durale	4
Grade 4 : résection subtotale	1
Grade 5 : simple décompression	0

Figure 1: méningiome de la convexité frontal gauche

En haut: Scanner préopératoire
En bas: Scanner postopératoire ; grade 1 de Simpson / aspect macroscopique de la lésion

Figure 1: méningiome de la convexité frontal gauche

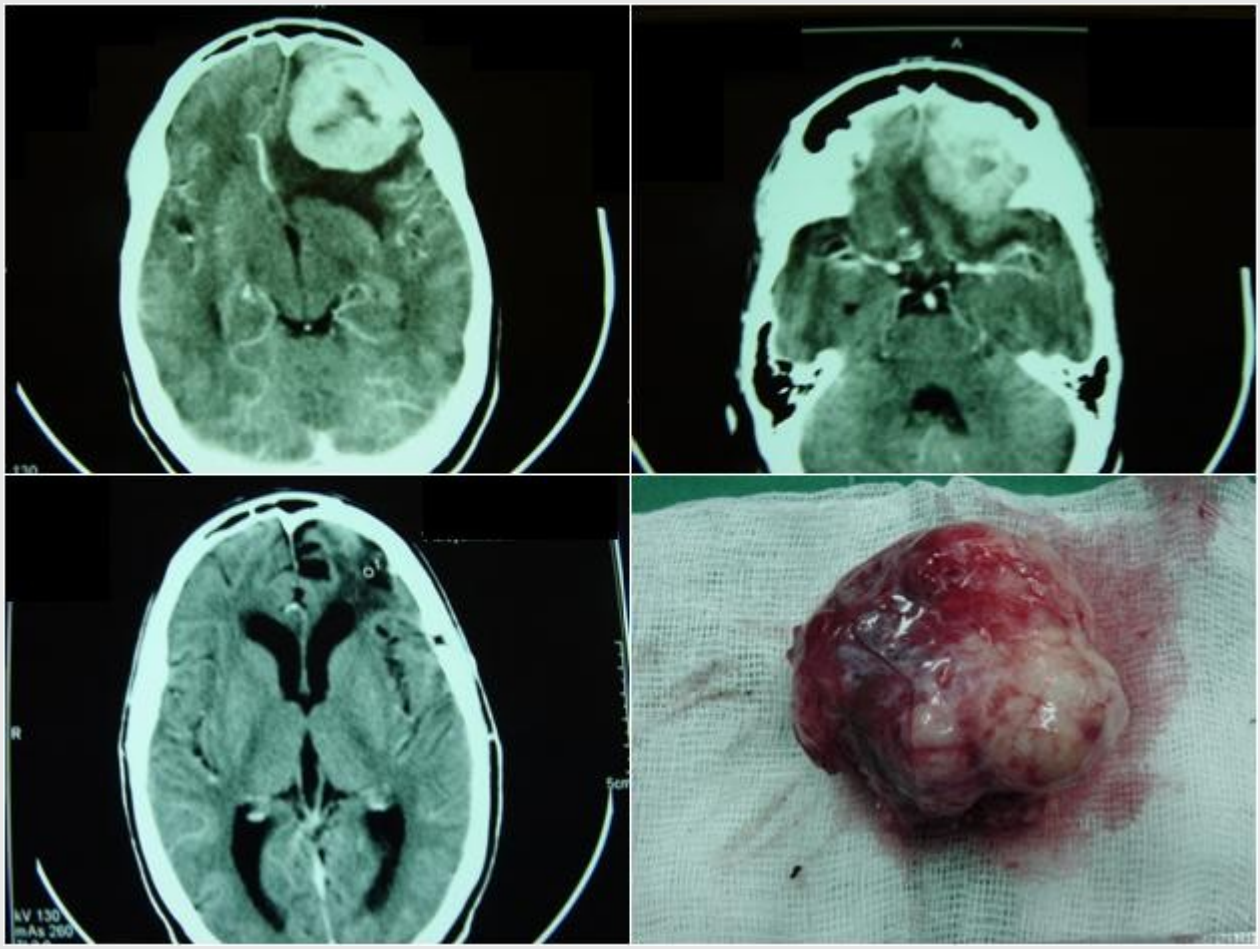


Figure 2 : scanner post-opératoire 3 ans après intervention méningiome de la faux 1/3 moyen /résidu tumoral non évolutif

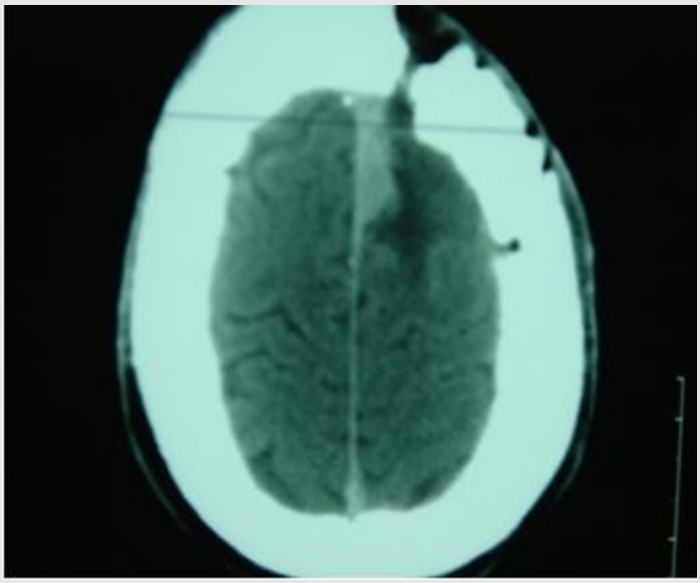
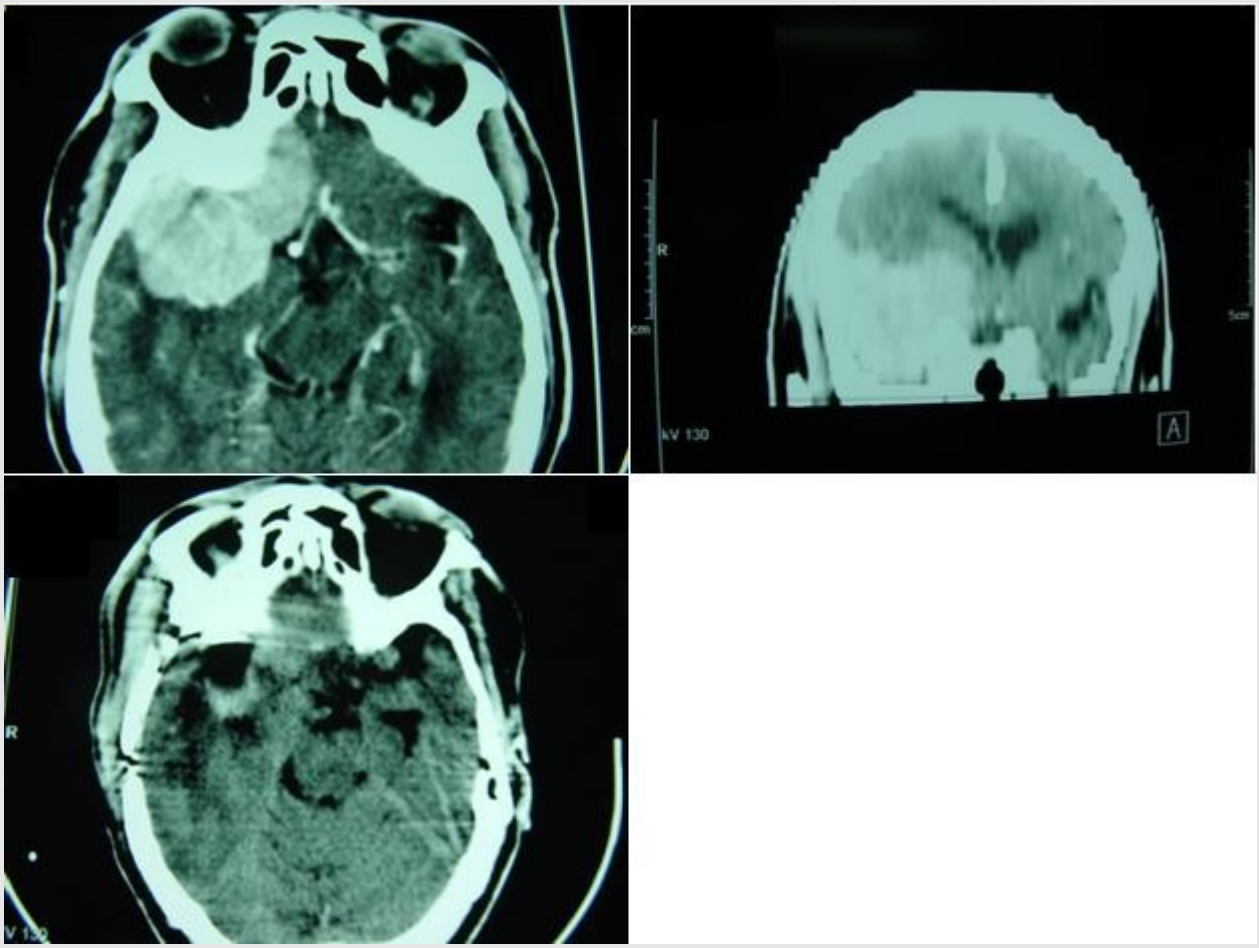


Figure 3 : Méningiome de la base : méningiome clinoïdien droit ou sphénocaverneux

En haut : Scanner préopératoire avec reconstitution sagittale.
En bas : Scanner postopératoire : grade IV de Simpson / reliquat tumoral au contact du polygone.

Figure 3 : Méningiome de la base : méningiome clinoïdien droit ou sphénocaverneux



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TECHNIQUES

PRATIQUE DE L'EEG CHEZ L'ENFANT SANS SEDATION

RECORDING EEG IN YOUNG CHILDREN WITHOUT SEDATION

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Keywords : Electroencéphalogramme, Enfants, Sédation, Technique, Electroencephalogram, children, sedation, Technic

ABSTRACT

Background
Although it has been considered that sedation in children undergoing EEG tests is effective and safe and complications are infrequent, occasionally adverse sedation-related events are presented.

Objective
The aim of this work was to determine if it is possible to carry out EEG in children up to 4 years old without sedation and analyze the factors that could influence upon the possibility of performing EEG, in vigil or with sedation. Methods: In the period between November 2001 to November 2004, 489 patients up to 4 years old were studied in order to analyze how several parameters (sex, age, and diagnosis) could influence upon conditions of performing electroencephalogram (with or without sedation). Patients were assembled into several groups : sex, age (I: 0 – 12 months; II: 13 – 24 months; III: 25 – 36 months; and IV: 37 – 48 months), and diagnostic. The affections were : epilepsy, hyperkinesia, cerebral palsy, spasticity, sobbing spasm, encephalopathy, and psychomotor retardation.

Results
281 electroencephalographic studies were carried out in vigil and this value represented 57,5% of the total electroencephalograms performed. During the performance of the study the children's behavior was independent of sex and initial diagnostic, but it was influenced by age. The higher number (104) of studied carried out in vigil was performed in children from 37 to 48 months, which represented 70,8 % of cases. The lowest percentage was obtained in children with psychomotor retardation

Conclusions
In most cases, it is possible to carry out electroencephalograms on children without using sedative drugs. To perform this study in vigil is advantageous because the recording of electroencephalographic signs in abnormal conditions of brain functioning and the appearance of contamination in the recording due to sedative drugs, which could confuse the diagnosis are avoided.

RESUME

Introduction
Bien que considéré comme inoffensive, la pratique de l'EEG sous sédation chez l'enfant n'est pas à l'abri de complications.

RESUME

Objectif
Le but de l'étude est déterminer s'il était possible de pratiquer l'EEG chez l'enfant âgé 4 ans ou moins, sans sédation.

Méthodes
Entre novembre 2001 et novembre 2004, 489 patients âges de 4 ans ou moins ont été regroupés selon l'âge (groupe I: 0 – 12 mois ; groupe II : 13 – 24 mois ; groupe III : 25 – 36 mois; et groupe IV: 37 – 48 mois), le sexe, le diagnostic (épilepsie, hyperkinésie, paralysie cérébrale, spasticité, spasme en flexion, encéphalopathie, et retard psychomoteur au cours de la pratique de l'EEG, avec et sans sédation.

Résultats
281 EEG (57,5%) ont été réalisés chez des enfants en état de vigilance normale. Le comportement des enfants étaient indépendents du sexe et du diagnostic mais essentiellement influencé par l'âge. Les EEG ont pu être réalisés principalement chez les enfants (104) entre 37 et 48 mois (70,8 %). Le pourcentage le plus bas a été observé chez les enfants atteints d'un retard psychomoteur.

Conclusion
Il est possible de réaliser des EEG chez l'enfant sans sédation. De plus, une vigilance normale permet d'étudier l'activité électrique du cerveau sans artéfacts liés aux médicaments utilisés.

INTRODUCTION

The term electroencephalogram (EEG) is used to refer to the electrical activity produced by the alive brain. This activity generated spontaneously can be monitored by electrodes. This approach produces no pain or uncomfort in patients (10).
Generally, electroencephalography is carried out in vigil, but nevertheless sedation is sometimes necessary to perform EEG on children. The use of sedative drugs is often associated with both the short age of the patient and the presence of an illness that hinders the correct study performing. Application of sedative drugs in EEG laboratories has several purposes:
a)it allows the application of electrodes without causing excessive anxiety
b)it permits recording with less muscle movements and
c)it allows recording of the asleep state (8).
Although it has been considered that sedation in children undergoing EEG tests is effective and safe and complications are infrequent (8), occasionally adverse sedation-related events are presented. This takes place especially with children having problems in the control of secretions (7); or when an overdoses or drug interaction is used (2). In addition, electroencephalographic recording with sedation is carried out in abnormal conditions of brain functioning, thus consequently some signals associated with the administration of sedative drugs are present and therefore, this situation could confuse the interpretation of the result.
It has been shown that it is possible to reduce the number of EEG studies with sedation (8). This strategy has some advantages, to perform EEG in a natural way, allows a better interpretation of results and the risks of sedation are avoided. In this way, parents and relatives are most satisfied.
In order to avoid the complications of sedative drugs, we carry out EEG in children up to 4 years old without sedation and analyze the factors that could influence upon the possibility of performing EEG, in vigil or with sedation.

MATERIALS AND METHODS

EEG study was carried out in 489 patients up to 4 years old, during the period from November 2001 until November 2004. When the use of sedative drugs was indispensable, children were sedated with barbiturate drugs by a specialized pediatrician in anesthesiology. When it was possible, EEG was performed without using sedative drugs. According with our work conditions, we developed a strategy to perform this study in vigil.
Patients studied were assembled into several groups as to sex, age (I: 0 – 12 months; II: 13 – 24 months; III: 25 – 36 months; and IV: 37 – 48 months), and diagnosis with which they arrived to the department. These

affections were epilepsy, hyperkinesia, cerebral palsy, spastic lesion, sobbing spasm, encephalopathy, and psychomotor retardation. Finally, it was determined if the variables above mentioned had any influence upon the possibility of performing EEG in vigil or with the use of sedative drugs.
The statistical procedure was carried out using the professional software Statistic for Windows, Version 4.0, Copyright Statsoft, and Inc.1993. The study included the Kruskal-Wallis test. In such cases where this test was positive, a Mann-Whitney U test was conducted.

Methodology used to perform EEG in vigil

Preparation of the patient: Frequently children cry when they enter the EEG laboratory as response to the presence of unusual environment and unknown people. The first step is to reduce the child's anxiety. With this aim, it is essential to establish communication between the nurse and the child. The interaction with these patients is carried out by means of a conversation. It should be explained, using a concrete terminology, the characteristics of the test and in children of short age, who do not understand the verbal language, it is necessary to use a corporal language in order for them to understand that EEG is not an aggressive study. The patient can thus interpret that this technique does not produce pain.
It is beneficial the parents' presence during the study. They can help by offering their support and by demonstrating affection to the child. Previous to EEG study, parents should have received a complete explanation regarding the technique that will be applied to the child.
The room where EEG is going to be performed should have adequate conditions. Noises and interferences should be avoided. It is important that the technician requests to the doctor to limit the number of strange people that enters and leaves the laboratory during the procedure, because it could increase the patient's anxiety.
Placement of electrodes: It is important to let the child use his/her favorite toys or others which would help in demonstrating the conducting of the study. It is recommended to have a group of toys in the laboratory, which can be used to explain the child how electrodes will be put in his/her head. In the cases in which children are not convinced with this method, it is recommended to give them the opportunity to put an electrode in the toy in order to diminish his/her fear.
The child is sustained in the bed or in the mother's arms. The region in which the electrode is going to be placed is cleaned with alcohol and a cleaner substance in order to reduce the impedance electrode-skin. Later, a conductive gel is applied which, at the same time, is adhesive and it holds the electrodes. Disk scalp electrodes that are placed according to the 10-20 International System are used (6). The impedance electrode-skin should be verified and it should not be higher than 20 kW.
Electroencephalographic recording: During the performance of EEG study it is useful that parents sing children's songs or relate children's stories to the child, by using a very soft tone of voice. Consequently, the children will be distracted and the performance of the study will be easier.
During the study some maneuvers are carried out such as to close and open the eyes, hyperventilation, and photo stimulation. The performing of these maneuvers is achieved, when the nurse imitates the behavior that is requested from the child. The parents' collaboration for carrying out all these maneuvers is important. To carry out hyperventilation, one should request the child to do like when he blows the candles of his/her birthday cake or when he/she inflates a balloon. To carry out the photo stimulation, it is explained to the child that the approach is like to take some birthday pictures. In general, working with the children's imagination can be possible to obtain better results.

RESULTS

The methodology used in our department, in order to perform EEG in vigil, was adequate. The number of EEGs carried out with the use of sedative drugs in children of short age was thus reduced.
The quality of EEGs recording performed in vigil was higher due the contamination of the recording was avoided. Figure 1 shows the difference in the quality of the EEG recording, carried out in the same child, first without sedation and later using sedative drugs.
From a total of 489 children studied by electroencephalography, 208 studies were carried out using sedative drugs and 281 of them were studied in vigil. Thus, 57,5% of the total studies did not need the application of sedation. 100 % of the EEGs performed in vigil were successful.
From the 281 EEG performed without application of sedative drugs, 126 were girls (44,8 %) and 155 were boys (55,2 %). In spite of the differences between the number of boys and girls studied in vigil, significant differences were not found between both groups.

Forty-three EEG in vigil were performed in children up to one year old, this value represented 52,4 % of studies carried out without the use of sedative drugs. Sixty-four studies in vigil (47,4 %) were performed in children that belonged to the 13 - 24 months group. Seventy children from 25 to 36 months (56,0 %) were studied by EEG without sedation.
The higher number (104) of studied carried out in vigil was performed in children from 37 to 48 months, which represented 70,8 % of cases (figure 2). The number of children from groups I and II performed in vigil were significantly different to the number of studies carried out in the same conditions belonging to group IV ($p<0.001$). As it was expected this behavior was the same for the group of children studied in sedation.
Figure 2 shows the percentage of electroencephalographic studies performed both in vigil and with sedative drugs regarding the different diagnosis with which patients arrived to the EEG laboratory. For all affections, the percentage of EEG carried out without the use of sedation was equal or higher than 50 %, except for Psychomotor Retardation. The highest percentage of EEGs carried out in vigil, in descendent order, was obtained in children with hypyperkinesia, epilepsy, spasticity and cerebral palsy. The lowest percentage was obtained in children with psychomotor retardation. Although there were no significant differences among the number of studies performed in vigil, as to the different diagnosis, the number of EEG performed without sedation had a clear tendency to increase in children with the diagnosis of hyperkinesia and Epilepsy. Whereas in children with diagnosis of psychomotor retardation, there was a tendency to decrease.

DISCUSSION

It is well known that the use of sedative drugs is always accompanied of several risks. Cote et al. demonstrated that a high percentage of children suffer drug-related adverse outcomes after administration of a wide variety of medications (1). They observed that negative outcomes were associated with all classes of drugs and ways of administration (2, 3). In spite of these risks observed in children, associated to sedation, it has been exposed that sedation in children during the EEG procedure is effective and safe and complications are infrequent (8). Nevertheless, we considered that in our conditions of work, it could be possible to develop a methodology for carrying out the electroencephalography in children without using sedative drugs. EEG is a study that does not cause pain, consequently it was conceivable to perform the examination in a great percentage of children avoiding the utilization of sedative drugs.

As far as we are concerned, the development of a methodology to perform the EEG in vigil was advantageous. The parents and/or relative accompanying children who underwent the study in vigil were more satisfied. Also, the quality of EEG recording in the cases in which sedation was not used was better because the appearance of typical signals due to sedative drugs were avoided (Figure 1). The muscle movements that are reflected in the recording when sedation is not used did not hinder, in any case, the interpretation of the result. This outcome can be explained due to the patient's anxiety was decreased by means of the interaction with the technician. For this reason, the interpretation of the result by the specialist was easier and safer.
A total of 281 studies (57,5 %) were performed without application of sedative drugs. These results are similar to those obtained by Olson et al. (8). They were able to decrease the proportion of children requiring sedation from 32 % to 2 %, using behavioral techniques to decrease the child's fear. There have been several opinions regarding the study of Olson et al. (1,5). Nevertheless, by all means, these researchers have developed an adequate strategy to perform EEG in vigil on children.
From the EEGs carried out in vigil, 44,8 % were girls and 55,2 % were boys. Our results indicate that sex did not influence on the patient's behavior regarding the possibility to perform the EEG in vigil or under sedation. Although generally girls are more docile than boys, if children would be able to understand that the study is not an invasive approach and they do not perceive fear, it will be easy to carry out EEG in vigil.
As it is shown in figure 2, the age of children influenced on the behavior of performing EEG in vigil. Higher difficulties to carry out the electroencephalographic study in vigil are presented in children of up to 2 years of age. With an increase of the children's age, there is a decrease in the need to use sedative drugs. This behavior could be justified because children of more age understand better the explanation given by the technician. Thus, in these cases, for the technician is easier performing the study without sedation.
Higher difficulties for performing the EEG in vigil were presented in children with diagnosis of Psychomotor Retardation. These results were influenced by characteristics of patients with this affection. In these patients there is retardment in the learning process and in social abilities, which makes the technician-child interaction more difficult (4).

It was relatively easier to carry out the study without sedative drugs, in children with diagnosis of epilepsy and hyperkinesia. The pathophysiology of these affections, which is associated with neurochemistry disturbances (9) do not hinder, in most cases, that children establish social interaction allowing them to understand the technician explanation.
We consider that although it is more difficult to perform EEG in vigil on children of less than 4 years, in most cases, it is possible to increase the number of studies carried out in vigil by reaching a better interaction between technician and patients.

CONCLUSION

The results of this study demonstrated that, in most cases, it is possible to carry out electroencephalograms on children without using sedative drugs.

TABLE 1: Number of EEGs performed in vigil and with sedation for each group of age.

Group of ages	EEGs performed with sedation	EEGs performed in vigil	Total of EEGs performed
I	39 (47.6 %)	43 (52,4 %)	82
II	71 (52,6 %)	64 (47,4 %)	135
III	55 (44,0 %)	70 (56,0 %)	125
IV	43 (29,2 %)	104 (70,8 %)	147

FIGURE 1

It is shown the difference in the EEG recording between a study carried out on a child of 3 years old without sedation (A) and with sedation (B). In this study a disorder of the electrical activity was detected during the performance of EEG in vigil. This alteration was not evident when the study was carried out with sedation.

FIGURE 1

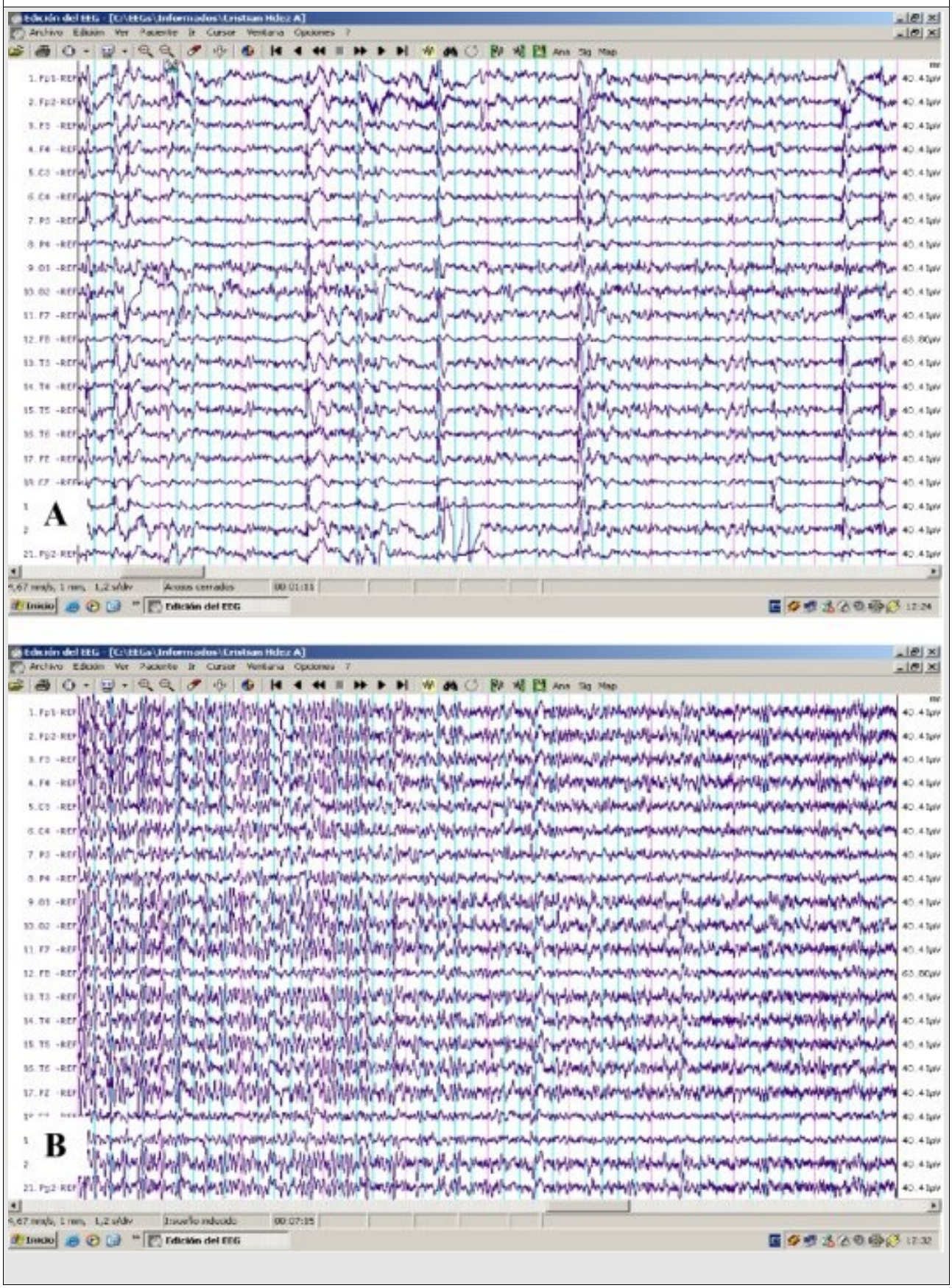
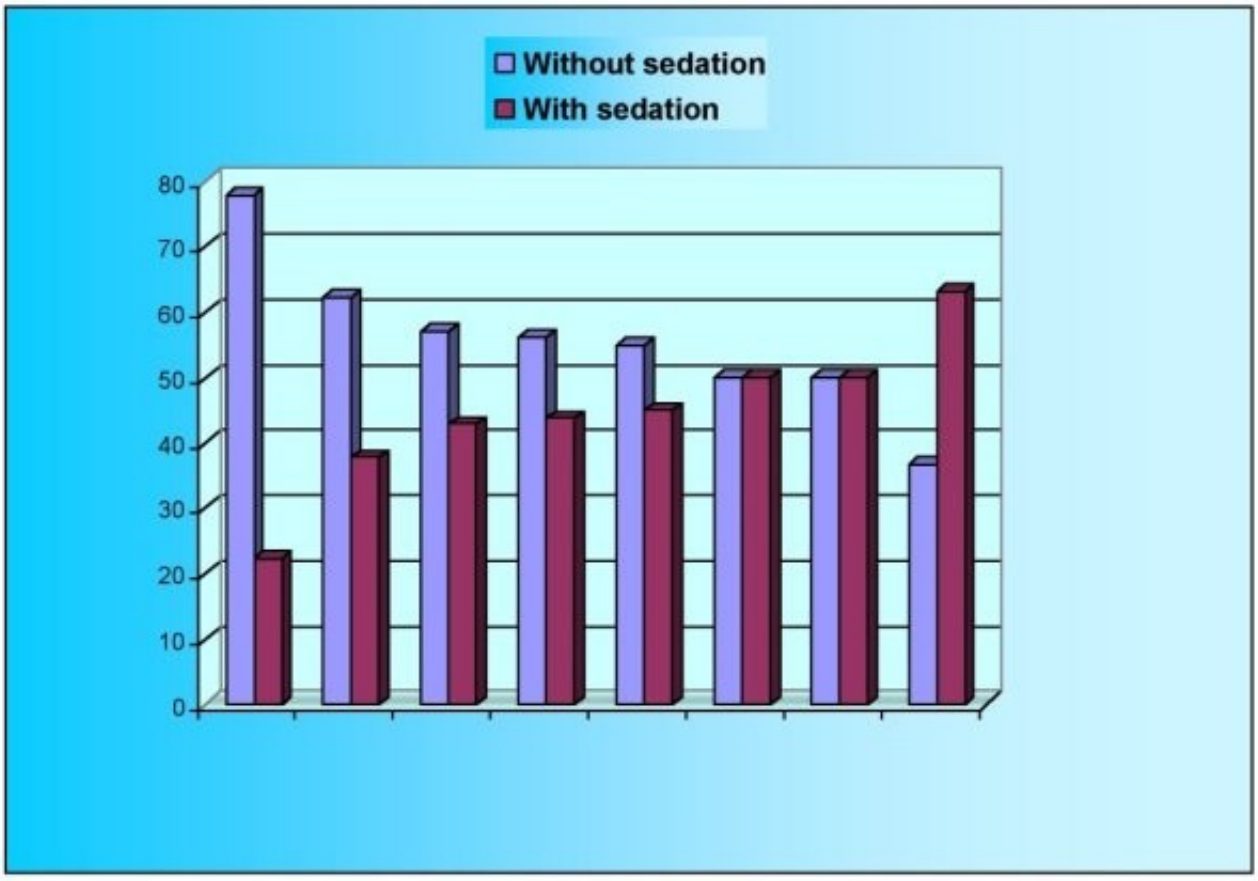


FIGURE 2

Number of EEGs performed with sedation and in vigil for the different affections. Hiperk: Hiperkinesia. Epilep: Epilepsy. S.L: Spastic Lesion. C.P: Cerebral Palsy. S.S: Sob Spasm. Enceph: Encephalopaty. P.R: Psycomotor Retardation. Other: This group includes affections less frequent such as Traumatic Brain Injury, Ataxia, Macrocephaly, and Hydrocephalus.



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CAS CLINIQUE / CLINICAL CASE

MÉNINGIOME GÉANT A DÉVELOPPEMENT INTRA ET EXTRACRANIEN

GIANT INTRA AND EXTRACRANIAL MENINGIOMA

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Keywords : CT scan, Meningioma, MRI, Skull, Crâne, Méningiome, Scanner, IRM

RÉSUMÉ

Le méningiome géant de la voûte du crâne est une tumeur bénigne rare. Les auteurs rapportent une observation d'une localisation pariétale droite chez un patient de 56 ans. Ils discutent les aspects cliniques, radiologiques et étiologiques de cette pathologie.

ABSTRACT

Giant meningioma is a rare benign tumor. We report a case with a right parietal bone localization. Clinico-pathological and radiological findings of this uncommon tumor are discussed.

INTRODUCTION

Les méningiomes intraosseux de la voûte crânienne sont rares et surprenants par leur localisation par des néoformations qui prennent naissance à partir des cellules arachnoïdiennes. L'aspect radio-clinique peut faire craindre une tumeur maligne. Nous rapportons une observation d'une localisation pariétale et nous proposons une revue de la littérature de cette affection tout en insistant sur son aspect radiologique.

OBSERVATION

Mr A.D, 49 ans, sans antécédents pathologiques notables, ayant présenté il y'a quatre ans une petite tuméfaction pariétale antérieure droite, augmentant progressivement de volume, s'accompagnant de céphalées localisées en temporo-pariètal de façon transitoire. Le tout évoluant dans un contexte de conservation de l'état général. L'examen clinique notait la présence d'une masse de 10 cm de grand axe, dure, non douloureuse à la pression. Le reste de l'examen général était sans particularité. Il n'avait pas d'anomalie biologique notable. La radiographie du crâne en incidence tangentielle visualisait un épaississement important de la voûte avec ostéocondensation hérissée de spicules disposés en rayon de soleil (figure 1). La scintigraphie osseuse montrait une hyperfixation nette correspondant à la lésion. Les

coupes TDM montraient l'épaississement considérable de la voûte et la présence de spicules osseux surmontant les tables interne et externe (figure 2). En regard de la lésion osseuse il existait une prise de contraste intense des structures méningées. L'IRM réalisée en séquences pondérées T1, T2 et T1 avec gadolinium retrouvait une lésion en hyposignal T1 et T2 (figure 3) prenant le contraste de façon hétérogène, développée en exo- et endocrânien mais reste bien limitée par une coque hyperintense et épaisse (figure 4). Le traitement chirurgical permettait l'exérèse de la masse tumorale, et découvrait l'absence d'envahissement du parenchyme cérébral. l'étude anatomo-pathologique établissait le diagnostic de méningiome méningothélial. Les suites opératoires étaient simples sans récidive à 1 an.

DISCUSSION

Les méningiomes sont des tumeurs généralement bénignes développées aux dépens des cellules arachnoïdiennes des méninges. Les méningiomes intra-osseux ou méningiomes ectopiques sont très rares, leur incidence est faible moins de 2% [13]. Ils peuvent être situés au niveau du cuir chevelu, de l'orbite, les fosses nasales et les espaces para pharyngés [2].
Quatre types de méningiomes ectopiques peuvent exister selon la clasification de Hoye [7].
Le type A correspond à l'extériorisation d'un méningiome initialement intracrânien, c'est la forme habituelle et 20% des méningiomes peuvent avoir ce comportement. Cette extériorisation peut se faire à travers les trous de la base, les sutures du crâne ou les canaux de Havers. L'extension se produit fréquemment vers l'orbite, les fosses nasales, le sinus, l'espace parapharyngé, le rocher et la peau.
- Le type B concerne les méningiomes qui naissent à partir des cellules arachnoïdienne extracraniennes, situés le long des zones de fusion du crâne embryonnaire et du rachis ou le long des gaines des nerfs crâniens.
- Le type C correspond au méningiome primitif ectopique sans aucun rapport avec les nerfs crâniens. Notre observation en fait partie. Ces méningiomes peuvent se développer à partir des cellules mésenchymateuses multipotentes ou du piégeages des méningocytes au cours de la fusion des structures médiane pendant le développement intra-uterin ou encore de la transformation métaplasique des cellules de Schwann en méningocytes.
- Le type D de Hoye correspond aux métastases d'un méningiome malin intracrânien.
Cette possibilité se produit par le liquide céphalorachidien ou par voie hématogène.
Au niveau du crâne, cette lésion se situe toujours au contact d'une suture le plus souvent coronale ou d'un foyer de fracture [3, 6,10]. Plusieurs auteurs pensent que ces méningiomes proviendraient d'un piégeage des méningocytes dans les sutures crâniennes lors de l'embryogenèse, de l'accouchement ou d'un traumatisme crânien avec fracture [3, 8,10]. Le motif de consultation est l'apparition d'une tuméfaction ferme plus ou moins sensible associée à une infiltration des téguments responsable de céphalées. Ils peuvent exister des signes neurologiques en foyer ou de crises convulsives qui n'apparaissent qu'en cas de franchissement de la table interne [14].
En imagerie, L'aspect de la lésion est polymorphe en radiographie standard et peut prendre deux formes : la forme dite hyperostosante est la plus fréquente avec épaississement de la voûte, hérissée parfois de spicules osseux en « rayon de soleil », et bien visible sur les clichés en incidence tangentielle, comme dans le cas de notre observation; et la forme ostéolytique ou érosive, avec lyse osseuse associée ou non à une reconstruction. Des calcifications intratumorales peuvent exister dans 20% des cas [3,13].
L'examen tomodensitométrique permet de découvrir le méningiome qui a une densité tissulaire, le plus souvent supérieure à celle du cortex. Dans la forme hyperostosante, la TDM permet d'apprécier l'aspect trapu et régulièrement disposé des spicules, différent de l'aspect fin et anarchique d'une tumeur maligne [6, 11,12]. La scintigraphie au technétium montre une hyperfixation dans la majorité des cas.
L'imagerie par résonance magnétique permet une meilleure définition anatomique en montrant ses différentes composantes. La tumeur se traduit par un hyposignal marqué sur les séquences pondérées en T1 et en T2. l'injection intraveineuse de gadolinium entraîne une prise de contraste au sein de la composante intra-osseuse et au niveau des enveloppes méningées en regard. Elle permet un bilan d'extension méningé qui est souvent sous estimé par le scanner du fait de son faible contraste différentiel entre l'os et les méninges rehaussées permettant ainsi d'éviter une récidive par exérèse partiel. L'IRM permet également de détecter une extension intracrânienne, et d'étudier les angles ponto cérébelleux à la recherche d'une neurofibromatose [5]. Il est rare que le diagnostic de méningiome intra-osseux soit porté en pré-opératoire. Le diagnostic de certitude étant toujours histologique. Il s'agit généralement d'une tumeur bénigne de type méningo-endothélial ou transitionnel, rarement fibroblastique, angiomateux ou psammomateux. Dans 5% à 10% des cas, le méningiome est d'emblée malin, sarcomateux ou anaplasique.
Le diagnostic différentiel se pose essentiellement pour les formes ostéolytiques avec les métastases,

l'ostéosarcome et la lacune myélomateuse. Pour les formes hyperostosantes, le diagnostic différentiel se pose avec l'ostéome, la dysplasie fibreuse et la maladie de Paget [9] (tableau 1).
Le traitement chirurgical représente le traitement de choix de ces tumeurs bénignes, l'exérèse précoce peut éviter des complications neurologiques. Le risque de récidive est d'autant plus élevé que la résection a été incomplète [1, 4].

CONCLUSION

Le méningiome intra-osseux primitif de la voûte est une tumeur bénigne rare. Il doit être évoqué devant toute masse extracrânienne. L'imagerie en coupes permet souvent de caractériser la lésion, de dresser un bilan d'extension précis et de rechercher des lésions résiduelles ou récidivantes en postopératoire.

FIGURE 1

- Radiographie du crâne en incidence tangentielle visualisant un épaississement et une ostéocondensation irrégulière de la voûte pariétale droite.
- Tangential view of the skull shows a condensation and irregular thickening of the right parietal vault.

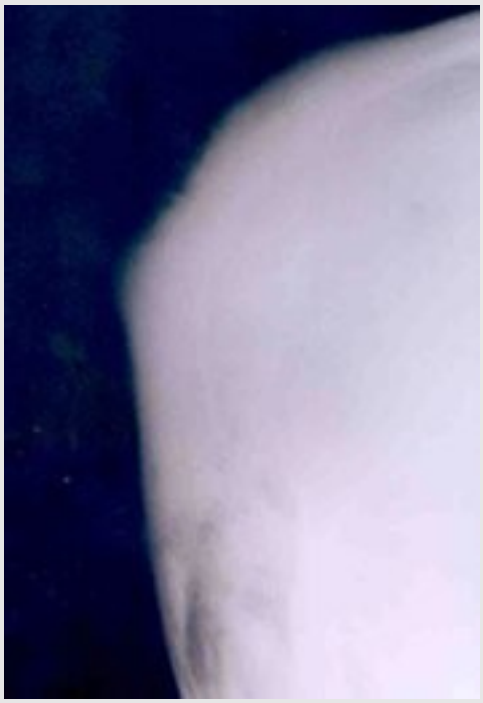

FIGURE 2

- Coupe TDM coronale en fenêtre osseuse : osteocondensation importante de la voûte pariétale droite avec épaississement bosselé de la table externe.
- Coronal high resolution CT scan : large condensation of the right parietal vault with embossed thickening of the outer table.

FIGURE 2

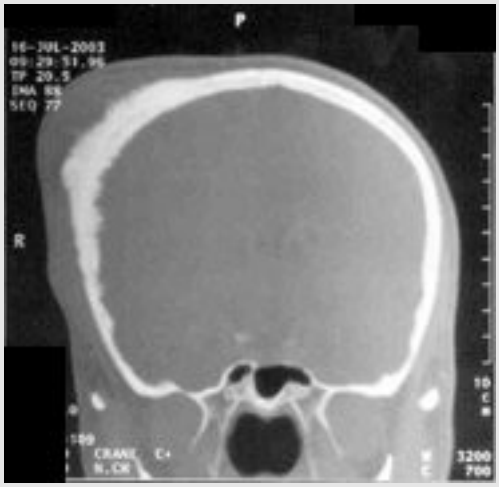

FIGURE 3

- IRM coupe axiale en séquence pondérée T1 (a) et coronale en séquence pondérée T2 : lésion de la voûte en hyposignal modérée, associé à un hyposignal T1 et hypersignal T2 des structures méningées en regard.
- Axial T1-weighted sequence MR image hypointense vault lesion, with hypointense T1 and hyperintense T2 adjoining meningeal structure.

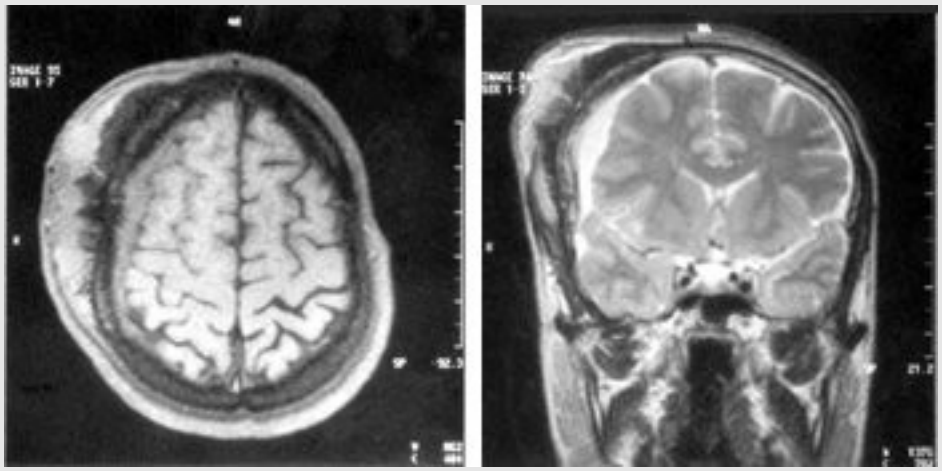

FIGURE 4

- IRM coupe axiale (a) et coronale (b) après injection de gadolinium : la lésion prend le contraste de façon intense et homogène.
- Axial (a) and coronal T1-weighted sequence MR image (b) after injection of gadolinium. Intense and homogenous enhancement.

FIGURE 4

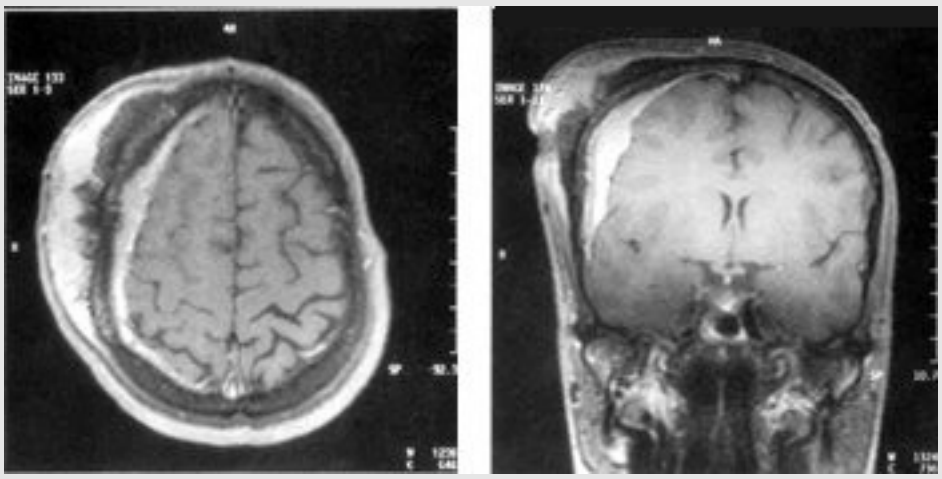

Tableau 1 : Principaux diagnostics différentiels des méningiomes intraosseux.

	Aspect de l'os	Contours lésionnels	Prise de contraste	Nombre de lésions
Métastases	-Lacunes ++ - lésions condensantes ou mixtes	Bien limités ou flou si petites et nombreuses	+	multiples
Dysplasie fibreuse	Epaississement plus condensation	Limites nettes	-	Lésions plus ou moins localisées
Lésion osseuse maligne primitive	.Lacunes avec perte de substance. .images condensantes ou mixtes.	Flou	++	Le plu souvent unique
Autre forme de mèningiome	Hyperostose ou érosion	Limites nettes	variable	En regard de latumeur
Maladie de Paget	Vastes plages lacunaires avec multiples taches de bougies de la table externe.	flou	-	Intéressant tout le crâne
Myélome multiple	Lacunes	Bien limités	+	multiples

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LETTRE / LETTER

ABSENCE DE RELATION ENTRE LA DIRECTION DU STIMULUS ET LA REPONSE AU REFLEXE CUTANE ABDOMINAL

SUPERFICIAL ABDOMINAL REFLEX IS NOT SENSITIVE TO DIRECTION OF THE MOVING STIMULUS

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Keywords : Africa, Reflex, Superficial abdominal reflex, Afrique, Réflexe, Réflexe cutané abdominal

ABSTRACT

Background
The superficial abdominal reflex is a skin - muscle reflex which is elicited by stroking the skin of the anterior abdominal wall

Objective
This study was done to determine if the direction of stroking the anterior abdominal wall, away from or towards the midline, determines the response of superficial abdominal reflex.

Method
70 male subjects with mean age 26 years (range 22 - 34, median 25 SD 2), were studied. Subjects without neurological diseases, previous abdominal surgeries, lesions of thoracic nerves like herpes zoster, were recruited consecutively into the study after informed consent. Subjects were restricted to males to avoid the effects of previous distensions of the abdominal wall from pregnancies. Three dermatomes, T8, T10, T12, were examined on each half of the anterior abdominal wall.

Results
The finding of this study shows no difference in the magnitude of contraction of abdominal muscles when the skin of anterior abdominal wall is stroked towards or away from the midline.

Conclusion
this study indicates that stimuli which move away from or towards the midline will elicit superficial abdominal reflex with similar magnitude.

RESUME

Introduction
Le réflexe cutané abdominal consiste à imprimer une stimulation sensitive sur la paroi abdominale.

But
Le but de l'étude est d'étudier le reflexe en fonction de la direction du stimulus.

Methode
70 patients indemnes de toute affection neurologique ont été étudiés en excluant le sexe feminin compte tenu de la distension cutanée apparaissant habituellement au décours de la grossesse.

RESUME

Resultat
L'étude n'a pas mis en évidence de modification significative.

Conclusion
L'orientation de la stimulation sensitive n'a aucune influence sur le réflexe cutané abdominal.

The superficial abdominal reflex is a skin - muscle reflex that is elicited by stroking the skin of the anterior abdominal wall [3, 4, 5]. Although it is generally advocated that the superficial abdominal reflex should be elicited by applying stimulus, usually with a blunt object, which moves from the lateral aspect of the abdominal wall towards the midline [4, 5], both directions for the stimulus, towards or away from the midline, are allowed in a text of neurological examination [3]. Although direction or orientation of stimuli is important determinants of response in the visual [6] and the vestibular [2] systems, these have not been shown to be important in the somatosensory system. This study was done to determine if the direction of stroking the anterior abdominal wall, away from or towards the midline, determines the response of superficial abdominal reflex.

Subjects without neurological diseases, previous abdominal surgeries, lesions of thoracic nerves like herpes zoster, were recruited consecutively into the study after informed consent. Subjects were restricted to males to avoid the effects of previous distensions of the abdominal wall from pregnancies. Three dermatomes, T8, T10, T12, were examined on each half of the anterior abdominal wall. Visual grading of the contractions of the abdominal wall muscles, rather than neurophysiological methods, was considered appropriate for this study since most assessments of superficial abdominal reflex are done clinically. Two examiners elicited the superficial abdominal reflex of each subject, while two observers, who did not examine the subjects, graded the magnitude of contraction of the muscles on a scale of 0 – 3; 0 for no contraction, 1 for flicker of contraction, 2 for definite contraction, and 3 for contraction with deviation of the umbilicus to the side stimulated. Examiners were trained to recognize dermatomes of the anterior abdominal wall, and to apply uniform pressure over the same distance when stroking inwards or outwards, while the observers were trained to score uniformly. Stimulation was restricted to landmarks of dermatomes, and stimuli were not allowed to cross the midline or to contact the umbilicus. Five subjects were used to train both examiners and observers. After satisfactory agreement and reproducibility, subjects were recruited into the study. Each subject was examined by two examiners in each of two sessions that were separated by 24 hours because the superficial abdominal reflex fatigues easily. The scores of both observers were averaged to remove bias [8]. To determine sample size for this study mean and standard deviations of scores for stroking towards or away from the midline of 10 subjects who were not part of the study were determined. To detect a difference of 0.5 between the mean scores of stroking towards or stroking away from the midline at  of 0.05 and  of 0.20, 65 subjects are required.

70 male subjects with mean age 26 years (range 22 - 34, median 25 SD 2), were studied. Mean scores of contractions of the abdominal wall muscles of all subjects are shown in stem and leaf plots of figures 1a and 1b. Mean score for stroking towards the midline was 2.4 (SD 0.75, median 2.6, range 0 – 3), while mean score for stroking away from the midline was 2.3 (SD 0.74, median 2.5, range 0 – 3). 95 % CI for the mean was 2.2 – 2.5 for stroking towards the midline, and 2.1 - 2.5 for stroking away from the midline.

The finding of this study shows no difference in the magnitude of contraction of abdominal muscles when the skin of anterior abdominal wall is stroked towards or away from the midline. This indicates that the direction of moving stimuli on the anterior abdominal wall does not contribute to the magnitude of contraction of the superficial abdominal muscles. This is not surprising since receptors of the somatosensory system are generally not sensitive to direction of stimuli [7].

Mechanical and electrical stimuli have been used to study the superficial abdominal reflex [1, 9]. An electrophysiological study [9] showed that electrical stimuli elicited two reflex discharges, a short latency monophasic wave and a long latency polyphasic wave, while mechanical stimuli which is similar to the bedside method, elicited only one long latency polyphasic wave. The two discharges of electrical stimulation, which has been likened to the R1 and R2 waves of the blink reflex, suggest that both monosynaptic pathway, which is probably spinal, and polysynaptic pathways, which probably involve the brainstem and cortex, are

involved in the superficial abdominal reflex [9]. Loss of superficial abdominal reflex in clinical situations when exaggerated muscle stretch reflex is present is probably due to involvement of corticospinal tracts in the pathway of the reflex [3].

In conclusion this study indicates that stimuli which move away from or towards the midline will elicit superficial abdominal reflex with similar magnitude.

Figure 1a

0 | 034
0 | 789
1 | 003
1 | 5557
2 | 00000011123333444
2 | 555555556666677777788889999
3 | 00000000000000

Figure 1b

0 | 044
0 | 8
1 | 0013444
1 | 55789
2 | 001123444444
2 | 55566667777788888888899999
3 | 000000000000000

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INFORMATION

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Le titre doit être écrit en anglais et en français. La page de titre doit contenir le nom complet de chaque auteur, leur affiliation institutionnelle actuelle ; l'adresse complète, le téléphone, le numéro de fax et l'adresse e.mail de l'auteur à qui toute correspondance doit être adressée.

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Le résumé doit être clair, précis et concis, et ne doit pas comporter plus de 250 mots :

Description : Exposer clairement et brièvement le sujet avec un bref rappel des connaissances actuelles.

Objectif : Indiquer le but du travail et son importance.

Méthode : Décrire les moyens, les techniques avec lesquels l'étude a été conduite.

Résultats : Faire part des observations recueillies et présenter les données significatives.

Conclusion : Interpréter les résultats. Donner les principales conclusions et recommandations. Proposer d'éventuelles futures investigations.

Les mots clés : 3 à 6 mots sur une ligne, en dessous du résumé, par ordre alphabétique. Utiliser les termes tirés de l'Index Médicus : Medical Subject Headings (MeSH).

Page 3 : texte

Le texte doit être clair, précis et concis. Les abréviations doivent être réduites au minimum et être explicitées dans le texte lors de leur première mention. Les termes anatomiques doivent être ceux de la nomenclature internationale.

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Matériel et méthode : Décrire la méthodologie très clairement. Toutefois il est conseillé de se référer à un travail précédent si la méthodologie y a été rapportée en détail. Ce chapitre doit inclure suffisamment d'informations pour que le lecteur comprenne la méthodologie. La méthode statistique devra être précisée.

Résultats : Résumer les résultats observés. Quand une signification statistique est donnée, préciser la méthode utilisée. Donner les valeurs exactes des p ($p < 0,005$)

Discussion : Insister sur les constatations significatives de l'étude et des investigations. Utiliser éventuellement des sous-titres pour permettre aux lecteurs de suivre la démonstration.

Conclusion : Rappeler les principales constatations de l'étude et faire part des implications cliniques et des applications potentielles.

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Les tableaux doivent être présentés sur une feuille séparée et numérotés selon l'ordre d'apparition dans le texte. Chaque tableau requiert un titre et une courte légende. Les abréviations ne sont pas permises. Toutes les mesures doivent être données selon le système métrique international (SI) et indiquées entre parenthèses à travers le texte. Les autorisations de reproduction sont requises pour toutes les illustrations et les tableaux ayant été publiés auparavant.
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Book
DUMAS M, LEGER JM, PESTRE - ALEXANDRE M. Manifestations neurologiques et psychiatriques des parasitoses. .2 nd ed.Paris : Masson 1986 :206

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PASQUIER F, JACOB B. How to evaluate cognitive dysfonction in patients with vascular dementia ? In : Leys D, Scheltens Ph (eds) Vascular dementia. Dordrecht, ICG Publications, 1994 :47-53.

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Page 1 : title page

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Page 2 : abstract

The abstract must be clear, precise and concise (no more than 250 words) describing the :
Background : briefly describe the problem being addressed and summary of background data.
Methods : define the basic design, procedures, and/or setting in which the study was conducted.
Results : significant data and observations gathered.
Conclusions : Interpret findings and give principal conclusions from the results and recommended guidance pathways and/or need for future investigations.

Key Words : - 3 or 6 words - one line below the abstract and listed in alphabetical order. Use terms from the Medical Subject Headings (MeSH) from Index Medicus.

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. state the purpose of the article
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[1] PAGE 1 : PAGE DE TITRE

• En anglais et en français
• Nom complet de chaque auteur
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• Adresse e-mail de l'auteur

[2] PAGE 2 : RÉSUMÉ

Pas plus de 250 mots en Anglais et en Français
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- Méthode
- Résultats
- Conclusion
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- Index : Médical Subject Headings (MeSH)

[3] PAGE 3 : TEXTE

[4] PAGE ... : REFERENCES

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No more than 250 words In English and in French
- Background
- Objective
- Methods
- Results
- Conclusions
- Key Words : 3 or 6 words. Terms from the Medical Subject Headings (MeSH).

[3] PAGE 3 : TEXT

[4] PAGE ... : REFERENCES

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