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Neurosyphilis in Psychiatric Practice in Uganda

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Summary. Fifty-seven African patients from Butabika Mental Hospital, Uganda, with a diagnosis of neurosyphilis, are described. Of these, thirty-four patients were new admissions during the year August 1969–July 1970, representing 1·3% of the total new admissions during that year.

Males were affected more often than females (M : F = 3 : 1), Bantus more often than other ethnic groups, and the patients were relatively youthful (mean age 46·3 years). The preponderance of cases were cases of GPI, while tabetic phenomena and Argyll-Robertson pupils were exceedingly rare.

It is noted that serological tests and laboratory studies of CSF are not entirely reliable as diagnostic aids, particularly in developing countries, and that cases, particularly in developing countries, diagnosed as neurosyphilitic on clinical grounds should be given the benefit of adequate penicillin therapy.

Résumé. Notre communication décrit 57 malades africains au Butabika Mental Hospital, en Ouganda, atteints de neurosyphilis. 34 de ces malades ont été admis pour la première fois entre le 1er août 1969 et le 1er juillet 1970, représentant 1·3% du chiffre total des nouvelles admissions pendant cette période. Dans ce groupe les hommes étaient plus représentés que les femmes (proportion 3 : 1); les bantous plus que les membres d'autres groupes ethniques, et les malades étaient relativement jeunes (age moyen: 46·3 ans).

La majorité étaient des cas de GPI, alors que le phenomène tabétique et les signes d'Argyll-Robertson se sont révélés extrêmement rares.

Nous notons que dans l'établissement d'un diagnostic, l'on ne peut se fier entièrement aux examens sérologiques et aux observations au laboratiore du liquide cephalorachidien (particulièrement dans les pays en voie de developpement), et que les cas qui sont l'object d'un diagnosic de neurosyphilis sur la base d'observations cliniques méritent de bénéficier d'un traitment adéquat de pénicilline.

INTRODUCTION

It has been previously suggested that neurosyphilis is of rare occurrence in Africans (Mac-

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Arthur, 1923). Contrary to this belief, neurosyphilitic psychoses appear to have been a common cause of psychiatric hospital admissions to Butabika Mental Hospital, Kampala, Uganda in 1965 (nearly 10% of all admissions), while of 3179 sera screened for syphilis in the same hospital in 1969, 5·2% were positive for treponemal antibodies using the Reiter protein complement fixation test (RPCFT) (Masawe, 1970). The figure of 10% of admissions is excessively high and reflects the shortage of trained staff at Butabika Hospital at that time. Clearly the diagnosis was over used, and 4–5% may be nearer the true figure.

Although apparently common, certain clinical features of parenchymatous neurosyphilis in Ugandan Africans appear to differ from clinical patterns reported in European patients. For example, the classical picture of tabes dorsalis is said to be rare, and the same is said to be true of pupillary changes of the Argyll-Robertson type. It is the purpose of this paper to attempt to systematize observations on clinical neurosyphilis in Uganda and to define the commoner clinical patterns seen in psychiatric practice.

PATIENTS AND METHODS

Fifty-seven unselected patients with neurosyphilis (according to the criteria listed below), admitted to the wards of Butabika Hospital (or found in chronic wards), between August 1969 and July 1970, were studied and the following parameters determined: age, sex, tribal origin, place of residence, occupation, circumstances leading to admission, past history of syphilis, physical status, mental status, and blood and cerebrospinal fluid status with respect to various standard tests for syphilis.

Butabika Mental Hospital

This hospital is situated 9 miles from the centre of Kampala and has 960 beds to which are admitted neuropsychiatric patients (civil and criminal) from all parts of Uganda (population 1969: 9·5 millions). A majority of the admissions come from Buganda and adjoining regions. All new admissions to the hospital are screened for syphilis at a regional laboratory using Price's precipitin reaction (PPR) or the venereal disease research laboratory test (VDRL) as screening tests, and the RPCFT as a confirmatory test when indicated.

Selection criteria

With the exception of one case (*vide infra*), all the patients included in this study satisfied at least *three* of the following criteria:

(a) Present signs of characteristic neurological disease and/or characteristic progressive dementia.

(b) A past history of syphilis and/or a penile scar.

(c) Positive serological tests (RPCFT or fluorescent treponema antibody absorption) in the blood.

(d) Positive serological tests for syphilis in the CSF with or without characteristic cytochemical abnormalities.

In nine cases the RPCFT in both blood and CSF was negative despite strong clinical evidence of neurosyphilis. Out of these nine cases, eight patients proved to have a positive fluorescent treponema antibody absorption test. The remaining case has been retained in this study on clinical grounds alone.

Categories of patients

It was decided to try and classify patients into four groups depending on the predominant clinical and biochemical findings. These groups were as follows:

(a) *Asymptomatic neurosyphilis.* Cases showing an absence of clear clinical signs of neurosyphilis but with positive CSF tests for syphilis.

(b) *Meningovascular syphilis.* These would be patients with headaches, cranial nerve palsies, fits, hemiplegias, paraplegias, meningitic signs and positive serological tests for syphilis.

(c) *General paresis of the insane* (*GPI*). This category would be for patients with dementia (intellectual and general physical deterioration), frontal lobe symptoms and signs, epileptic fits, dysarthria, upper motor neurone signs, mask like facies, tremulous tongues and pupillary changes.

(d) *Tabes dorsalis.* Patients complaining of lightning pains with characteristic sensory changes, pupillary changes, loss of deep reflexes and sensory ataxia.

RESULTS

There were forty-three males and fourteen females in the group (M : F = 3·1 : 1), with an age range from 29 to 75 years (mean 46·2 years). Thirty-four patients were new admissions, representing 1·3% of the total new admissions, and the remainder were chronic hospital inmates.

TABLE 1. Tribal distribution of patients

Tribe	No.	%
Baganda*	26	45·6
Etesots†	4	7·0
Barundi*	3	5·3
Banyankole*	3	5·3
Batoro*	3	5·3
Lugbara‡	3	5·3
Banyuli*	2	3·5
Tanzanian*	2	3·5
Banyarunda*	2	3·5
Banyoro	2	3·5
Basoga*	2	3·5
Others	2	3·5
Total	57	100

* Bantus, † Nilohemitic, ‡ Sudanci negroid.

The majority of patients came from the lower socio-economic groups. Forty (70%) were peasant farmers or farm labourers; three were elderly veterans of World War II; one was a policeman and the remainder were peasant housewives or were unable to state their occupation. In general their socio-economic status did not differ significantly from that of other patients admitted to Butabika Hospital, the vast majority of whom came from low income groups and reside in rural areas.

Tribal distribution

This is shown in Table 1. Most of the patients were Baganda despite the fact that large numbers of non-Baganda are domiciled in Buganda. However, in the absence of precise population statistics* no firm conclusions can be drawn from this.

Also, noteworthy is the predominance of Bantu patients. The small number of Nilotic and Nilo-Hamitic patients may have significance but, again, precise background statistics are not available.

Clinical aspects

In the majority of patients the onset of obvious clinical disorder was sudden and precipitous—although in view of the generally poor histories given by patients in this sociocultural group it seems likely that more insidious features would not have been reported by either patients or relatives. Forty-five patients were admitted on an Urgency Order accompanied by information that they had become acutely disordered mentally, with 'violence' as the major reason for admission. Two cases were transferred from Mulago General Hospital where they had been under treatment for paraplegia and hemiplegia respectively without much improvement. Another ten cases were remanded to the Forensic Unit at Butabika Hospital following criminal charges. In three cases uncontrollable epilepsy was given as a reason for admission.

Thus, in every case, dramatic physical, social (criminality) or mental (violence) changes were responsible for admission and there was a conspicuous absence of referal because of insidious personality deterioration or social eccentricity. This is in keeping with the general pattern of utilization of medical services in Uganda.

The salient clinical features are summarized in Table 2. Dementia and signs of bilateral corticobulbar and corticospinal degenerations (ataxia, altered reflexes, tremor and dysarthria) were the most prominent findings. A past history of syphilis was obtained in only sixteen patients. Epilepsy occurred in only three cases and pupillary changes plus diminished deep reflexes were also relatively infrequent. Typical Argyll-Robertson pupils (i.e. irregular myotic pupils reacting to accommodation but not to light) were found in only three patients (5·3%). Only two patients, classified as taboparetics, showed classical A-G pupils plus Charcot joints. Another nine patients (15·8%) had sensory abnormalities, but these included four patients with superimposed leprosy, two taboparetics, and two chronic alcoholics; in only one case was there no explanation for sensory changes other than neurosyphilis. Such combinations of pathology made it very difficult to interpret the relationship of these sensory changes to neurosyphilis, but no case of classical uncomplicated tabes dorsalis was seen.

Laboratory findings

The results of investigations carried out are shown in Table 3. No consistent pattern emerges but twenty-four patients (42·1%) showed reactive reagin tests (PPR +ve) in both blood and CSF and twelve (21·1%) had a positive RPCFT in both tissues. Another nineteen patients showed a positive RPCFT in blood alone (in four of these the blood PPR was *negative*), and in six cases, tests (PPR) were positive in the CSF alone, three of these CSFs having a positive RPCFT as well. This leaves eight patients with negative standard tests, even though by other criteria they appeared to have neurosyphilis.

* The population census of 1969 did not include data on the tribal origins of Uganda's peoples.

TABLE 2. Prominent symptoms and signs

Features	No.	%
Symptoms		
Progressive dementia	26	45·6
Past history of syphilis	16	28·1
Violence and ideas of persecution	16	28·1
Grandiose expansive ideas	10	17·5
Delusions and hallucinations	6	10·5
Epileptic seizures	3	5·3
Alcohol overindulgence	2	3·5
Signs		
Tremor and slurred speech	26	45·6
Aortitis (clinical and radiological)	12	21·1
Pupillary changes		
(i) Myotic and regular but sluggish reaction to light	10	17·5
(ii) Argyll-Robertson pupils	3	5·3
Ataxia	9	15·8
Sensory abnormalities	9	15·8
Skin ulcerations	9	15·8
Diminished tendon jerks	6	10·5
Charcot joints	2	3·5
Paraplegia	1	1·8
Hemiplegia	1	1·8

TABLE 3. Abnormal serological and cytochemical tests (out of fifty-seven blood specimens and fifty-seven CSF specimens)

Serology	Both blood and CSF		Blood alone		CSF alone	
	No.	%	No.	%	No.	%
PPR +ve	24	42·1	15	26·3	6	10·5
RPCFT +ve	12	21·1	19	33·3	3	5·3
FTA-Abs (only forty-three examined)	—	—	43	—	—	—

CSF cytochemistry (fifty-two specimens)	No.	%
(1) Pleocytosis (> 5 cells/mm³)	19	36·5
(2) Elevated protein (30–50 mg%)	16	30·7
(3) Elevated protein (> 50 mg%)	10	19·2

Note: The nineteen patients showing pleocytosis were all comprised within the group of twenty-six patients with elevated protein.

In forty-three cases (seven of whom were otherwise negative on standard tests), blood was further examined by means of the fluorescent treponema antibody absorption test (FTA-Abs) and all forty-three cases were *positive* on this test. Only one case remains, therefore, in whom all serological and CSF tests were negative, and this case has been retained in this series on the grounds of a history of syphilis plus clinical signs of dementia and corticobulbar disease.

With regard to CSF cytochemistry, nineteen patients (36·5%) had pleocytosis (>5 cells/mm^3) and twenty-six patients (49·9%) showed protein elevation (>30 mg/100 ml). However, these were routine findings subject to considerable laboratory error and too much stress should not be placed on them.

TABLE 4. Types of neurosyphilis

	No.	%
General paresis	49	84·2
(i) Dementing type	26	
(ii) Grandiose type	10	
(iii) Manic type	7	
(iv) Senile type	3	
(v) Epileptic type	3	
Taboparesis	6	10·6
(i) Definite	2	
(ii) Probable	4	
Meningovascular	2	3·5
Asymptomatic	—	—
Total	57	100

Types of neurosyphilis

The various clinical syndromes encountered are shown in Table 4, with a breakdown according to predominant clinical features.

The majority of patients, as one would expect of a series from a psychiatric hospital, were suffering from typical GPI (84·2%). Amongst these, simple dementia was most often the dominant clinical picture, with grandiose, expansive and manic symptom patterns not uncommon. Epileptic manifestations were present in only three patients.

Depressive symptoms were not noteworthy, but are difficult to isolate from a background of dementia. Depression may be more obvious at an earlier stage of these illnesses, but as already mentioned, all the cases in this series had already progressed to dramatic physical or mental events before being admitted to the psychiatric hospital.

Two patients had meningovascular syphilis and two had definite taboparesis, but there were no cases of either acute meningitic or asymptomatic neurosyphilis, nor any cases of isolated tabes dorsalis.

Treatment and response

With one exception, all patients received a minimum of 16·8 million units of fortified procaine penicillin (PPF) as the only specific treatment. In addition psychotropic drugs were used as indicated for symptomatic control of behaviour. The final results of treatment have

not yet been analysed, partly because of the difficulty in following up patients in tropical Africa and partly because hospital discharge rate has not been related to clinical improvement due to the retention of patients in hospital for forensic or social reasons. Generally, all the patients treated were rated as improved after treatment, and at the time of writing (mid 1971) no case still under observation has shown signs of progressive neurosyphilis or required a further course of specific therapy. Five cases are known to have died—one of severe burns, one of superimposed bacterial endocarditis, two of lobar pneumonia, and in the fifth case, without obvious cause.

DISCUSSION

In the past few decades the reported incidence of neurosyphilis has shown a marked decline, especially in developed countries. In the U.S.A. the number of new cases of neurosyphilis admitted to hospital had fallen from 7694 in 1940 to 232 in 1965 (Webster, 1970). A similar downward trend has been observed in Britain (Hare, 1959; Lancet, 1967); and in continental Europe (Topwik & Nowakowska, 1970).

In Uganda and other developing countries the situation is less definite. Facilities for diagnosis are generally poorly developed and reliable comparative studies are therefore not easy to carry out. A study based on the records of a general hospital (New Mulago Hospital, Kampala) published by Billington (1966) suggested that neurosyphilis had almost disappeared in Uganda in that the frequency of the condition seen in the hospital had dropped from 0·3% of all admissions in the period 1937–41 to 0·036% in 1960–64. However this conclusion is at variance with the findings of the present series and this is not difficult to understand, since Billington restricted his investigation to New Mulago Hospital whereas, since its opening in 1955, the majority of cases of neurosyphilis hospitalized in Uganda have been admitted to Butabika Mental Hospital.

For reasons so far unexplained, neurosyphilis in Uganda appears to affect the cerebral cortex more frequently than any other part of the nervous system. In other words, general paresis of the insane (GPI), is by far the commonest variety of neurosyphilis encountered, while tabes dorsalis and characteristic optical syndromes (Argyll-Robertson type) are exceedingly rare. In the present series there were only three authentic examples of A-G pupils and only two of taboparesis while in a comparable series by Dewhurst (1969), 17·6% of the cases were taboparetics. It might be thought that since this present study was carried out on a psychiatric hospital population, patients with tabes dorsalis and to a lesser extent, taboparesis, might be admitted elsewhere, but this does not appear to be the case. Previous general hospital and Ministry of Health records, together with past publications, from this area over the past 70 years have been reviewed, and only three cases of tabes have been discovered (Billington, 1942; Billington, 1966; Babigumira, Fowler & Lomholt, 1971). If the two tabetics found in the present series are added, only five cases of tabetic neurosyphilis have been diagnosed in the past 70 years in Uganda.

This apparent predilection of neurosyphilis for the cerebral cortex in Ugandan Africans is rather difficult to explain. The observation that negroid peoples are thus relatively immune to tabes dorsalis is not a new one (Hummel, 1911), but up till now no good explanation other than genetic predisposition has been offered. Bantus may be even more immune since of the two taboparetics in this series none was a Bantu—one was of Nilo-Hamitic stock (Etesot) and the other was Nilotic (Luo). Age may play a part in that the patients in this series were

relatively younger than those in other studies—a mean age of 46·3 years in this study as compared with Dewhurst's (1969) report of a mean age of 51·3 years in England. The difference seems slight and in any case there is no reported evidence that a young age is incompatible with tabes. At present there is no established explanation for these differences. It may be that varying predisposition to different forms of neurosyphilis reflects differences in diet, or in immunological background. An attempt is being made to investigate such possibilities.

With regard to GPI, the types of clinical picture encountered do not appear to deviate remarkably from those described for a recent English series (Dewhurst, 1969) with the exception that the simple depressed type was not seen at all. This observation has probably nothing to do with the prevalence of primary depression in the African, a matter of current controversy, but may reflect the apparent rarity of depression as a *reaction* to various stresses, physical or otherwise, in African subjects. Much more frequent are primitive psychotic reactions of frenzied or maniacal confusion with numerous paranoid features (Milek & Jilek-Aall, 1970); these were very frequent components of the clinical pictures described in Table 4 as dementing, grandiose or manic types. Hare (1959), in reviewing changing patterns of neurosyphilis in Western Europe since about 1800 found that before 1870 the grandiose excited type was most common, but became much rarer later. That this does not appear to have happened in Uganda yet may reflect the possible association of such excited clinical pictures with illiteracy, poor social conditions and poor general physical health. Even so, simple dementia was the most common clinical picture encountered in this series, and was second most common (after depression) in Dewhurst's series.

Serological tests for syphilis and laboratory examination of CSF are important aids to the diagnosis of neurosyphilis, but it should be stressed that such routine tests are not invariably positive. In the present series, considering tests in blood, CSF or both, only forty-five patients (78·9%) were reagin antibody positive (PPR) and only thirty-four (59·7%) were treponemal antibody positive (RPCFT). In eight cases neither test was positive anywhere. Only the fluorescent treponemal antibody absorption test was invariably positive in the cases examined, but this is not a routine test and is not readily available. Such findings are in keeping with other reports (Gillespie & Brown, 1964; Schmidt, Dein & Rasmussen, 1970; Dewhurst, 1968).

Cerebrospinal fluid cytochemistry is even more often reported negative with only 36·5% of patients showing a cellular increase, and 50% a protein elevation (Table 3). This large number of negative reports may reflect problems of collection, storage and transportation of specimens, but Cosnet (1965), reporting observations on thirty-two Zulu patients with overt neurosyphilis found very little CSF abnormality.

Such findings reflect what may be a specially severe problem in developing countries where the efficiency of medical and laboratory services is very variable. Laboratory tests cannot be relied upon to *exclude* a diagnosis of neurosyphilis and where such a diagnosis is suggested on clinical grounds, patients should be given the benefit of an adequate course of penicillin therapy.

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