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Clinical study of unilateral peripheral facial nerve paralysis in Nigerians

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Summary

The clinical feature of isolated unilateral peripheral facial nerve paralysis (PFP), seen in 153 consecutive Nigerians over a 14-year period at the University College Hospital (UCH), Ibadan, are presented. The hospital incidence rate was 2.67 per 10,000 with a mean annual rate of 11 per 100,000. Although males (61%) were more frequently affected than females (39%), the peak incidence for both sexes was in the third decade, and 53% of the cases were between 20 years old and 39 years old. Bell's palsy (ninety-three cases) was the most common type encountered. Hypertension (eleven cases) was associated with PFP only in patients above 50 years old. Herpes zoster infection (six cases) and otogenous (eight patients) were not uncommon. Although conjunctivitis (8%) was the most frequent complication, post-paralytic motor features in the form of synkinesia (eight cases), hemispasmas or contractures, and autonomic disturbances such as the crocodile-tear phenomenon (three cases) and auriculo-temporal syndrome (one case) were rare.

Résumé

La présentation clinique de la paralysie isolée du nerf périphérique facial (PFP) fut la base de cette étude dont 153 Nigérians furent, les uns après les autres, les sujets au cours de 14 années au centre hospitalier universitaire (UCH) d'Ibadan. Le taux d'incidence à l'hôpital s'élevait à 2.67 pour 10,000 malades alors que la moyenne annuelle était de l'ordre de 11 pour 100,000. Bien que les hommes (représentant 61%) étaient plus fréquemment touchés par cette maladie que les femmes (39%), le groupe d'âge le plus particulièrement touché était celui de la troisième décennie. En fait, 53% des malades avaient entre 20 et 39 ans. Le type le plus commun était le paralysie dite de Bell, qui représentait 93 des cas étudiés. Il n'y avait que 11 cas d'hypertension associée à ce genre de paralysie, et elle se manifesta chez des patients ayant plus de 50 ans. L'infection zoëster de Herpès (manifestée en six cas en tout) et des causes otogènes (chez 8 patients seulement) étaient relativement rares. La complication la plus fréquente était le conjunctivité (notée chez 8% des cas) mais d'autres manifestations post-paralytiques étaient rares, se présentant sous forme de synkinésie (8 cas), d'hémispasmes ou de constrictions des dérangements autonomiques telles les larmes de crocodile (3 cas) et le syndrome auriculotemporal (un seul cas).

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Introduction

Paralysis of the facial nerve is a serious problem not only because of the discomfort to the patient as a result of difficulty in speaking, chewing, voluntary and emotional facial expression but also for the psychological alarm it creates following sudden onset of facial asymmetry and disfigurement (Cohen, 1960). The facial nerve has the longest course in a bony canal, and is more frequently paralysed than any other motor nerve in the body (Cawthorne, 1953). Although various aspects of unilateral peripheral facial paralysis (PFP) in several races have been published (Kettel, 1947; Parks & Watkins, 1949; Taverner, 1955; McGovern & Fitz-Hugh, 1956; Adour & Wingred, 1974), information about peripheral facial nerve paralysis in the African is scanty (El-Ebiary, 1971; Bademosi, Ogunlesi & Osuntokun, 1982). This communication reports the experience in the Nigerian.

Patients and methods

All the patients who presented primarily with isolated unilateral PFP at UCH, Ibadan, and were assessed by the Neurology Unit over a 14-year period form the basis for this study.

Patients with other peripheral nerve lesions, associated systemic disorders, as well as defined syndromes such as Guillain-Barré syndrome and neurofibromatosis, were excluded from the study.

Bell's palsy was diagnosed in patients with isolated PFP for which no apparent cause was found.

The patients were routinely screened for diabetes mellitus and otolaryngological diseases, and precipitating factors including preceding febrile illness, travel in an automobile, exposure to draught, injections and immunizations, aural pain, vesicles or rash on forehead, external auditory meatus and back of the ear lobe. Additional epidemiological details obtained included determination of the day and month of onset of illness.

Electrophysiological studies performed included the following:

(i) Determination of the facial nerve latency and conduction velocity on both the normal and paralysed sides, stimulating the nerves in front of the tragus and recording from in-situ coaxial needle electrode (CNE) in the frontalis muscle.

(ii) Determination of the minimal excitability threshold for both the normal and paralysed sides: defined here as the minimal voltage with current of square wave pulses of 100-msec duration at the rate of 1/sec required to produce a visible twitch on the oscilloscope sampling the frontalis muscle with a CNE and stimulating the nerve in tragus.

(iii) Routine (serial when necessary) electromyographic study of the frontalis and orbicularis oculi using an in-situ CNE.

Recovery of the paralysis was classified as:

(i) *Complete*. If no clinical disability was observed after treatment or follow-up, at least 6 months after initial assessment by the Neurology Unit.

(ii) *Partial*. If the clinical disability at review 6 months after initial assessment was less than the picture on presentation.

(iii) *None*. When no discernible change was observed, or no contraction was elicited in the facial muscles on stimulation of the facial nerve in front of the tragus after at least 6 months' follow-up at the clinic.

The patients were assessed regularly every 2 weeks for the first 6 months at the Neurology Out-patient Clinic, at 4-weekly intervals for the next 6 months, and subsequently at 3-monthly intervals until discharged.

Results

A total of 153 cases were encountered during the period of study, while 573,000 new patients were seen in the various consultative clinics in UCH, Ibadan, during the same period. The frequency in the hospital population is 0.03% with an incidence of 27 per 100,000. The age and sex distribution (Table 1) show a male to female ratio of 3 : 2 with the peak incidence for both sexes in the third decade. The age and sex distribution is as for the entire group but there is no sex preference.

Facial asymmetry, weakness of the facial muscles and inability to close the affected eye properly were present in all the patients. Difficulty with mastication (35%), aguesia (27%), tinnitus (19%), tendency to dribbling saliva from the ipsilateral angle of the mouth (12%), and hyperacusis (10%) were the other major presenting features.

The aetiological diagnosis and prognosis are shown in Table 3. Bell's palsy (61%) was the commonest form encountered. Complete recovery was observed in 58% (fifty-four out of ninety-three) of the patients with Bell's palsy.

Table 1. Age and sex distribution of patients with isolated peripheral facial nerve paralysis

Age (years)	Male	Female	Total	%
0–9	4	8	12	8.0
10–19	10	7	17	11.0
20–29	28	18	46	30.0
30–39	22	14	36	23.0
40–49	14	7	21	14.0
50–59	12	5	17	11.0
60+	4	—	4	3.0
Total	94	59	153	100.0
%	61.0	39.0	100.0	

Table 2. Age and sex distribution of patients with Bell's palsy

Age (years)	Male	Female	Total	%
0–9	3	2	5	5.0
10–19	3	4	7	8.0
20–29	19	16	35	38.0
30–39	11	10	21	22.0
40–49	9	6	15	16.0
50–59	3	4	7	8.0
60+	2	1	3	3.0
Total	50	43	93	100.0
%	54.0	46.0	100.0	

Table 3. Aetiological diagnosis and prognosis of peripheral facial nerve paralysis

Aetiology	No. patients*	Recovery† C	P	N
Bell's palsy (idiopathic)	93 (61)	54	27	12
Infections	16 (11)			
Herpes zoster	6	5	1	—
Post-meningitis	4	—	1	3
Leprosy	3	—	2	1
Others‡	3	3	—	—
Trauma	15 (10)	6	4	5
Vascular	12 (8)			
Hypertension	11	10	1	—
Sickle-cell anaemia	1	1	—	—
Otogenous	8 (5)			
Otitis media	6	5	1	1
Tuberculous granuloma	2	1	1	1
Miscellaneous§	5 (3)			
Tumours¶	4 (3)	—	—	4

*Percentage in parentheses.

†C = Complete, P = partial, N = none.

‡Typhoid fever, mumps, tetanus (1 each).

§Diabetes mellitus (3), Moebius syndrome (1), cancrum oris (1).

¶Malignant trophoblastic disease (2), primary liver-cell carcinoma (1), ovarian carcinoma (1).

Herpes zoster infection (Ramsay Hunt syndrome) occurred in six patients, five of whom recovered completely. Of the eight patients with otogenous lesions, six recovered completely. Peripheral facial paralysis was the initial presenting feature in three patients with leprosy. Trauma was responsible for the facial paralysis in fifteen patients (10%); one-third of them had no evidence of recovery after 1 year. The facial paralysis followed severe head injuries sustained in automobile accidents in ten patients, operations for either parotid gland tumours or middle ear pathology in four, and gun-shot injury in one patient. None of these fifteen patients had surgical exploration or repair of the facial nerve, and four of them were seen only in the acute phase of the injury. In eleven patients, all over 50 years old, PFP was associated with hypertension and a diastolic blood pressure above 100 mmHg was recorded in all the patients; of these, ten recovered completely. One patient presented with PFP during a sickle-cell haemolytic crisis but recovered completely after the episode. Unilateral peripheral facial nerve paralysis was the presenting feature in three patients with diabetes mellitus; the disability resolved completely in two following stabilization of the diabetic state. Cerebral or aural metastases from malignant tumours were responsible for isolated PFP in four patients; malignant trophoblastic disease accounted for two cases, while primary liver-cell carcinoma (one) and ovarian carcinoma (one) were the other primary sites. Table 4 shows the complications seen in the patients. Autonomic dysfunction in the form of crocodile-tear phenomenon (three patients) and auriculotemporal syndrome (one patient) were uncommon.

There was no evidence of seasonal predilection, clustering of cases to any particular areas of the country or any suggestion of epidemics.

Table 4. Complications of peripheral facial nerve paralysis in Nigerians

Complication	No. patients
Ocular	
Conjunctivitis	13
Corneal ulceration	4
Motor post-paralytic	
Synkinesis	8
Hemispasm/tics	4
Contractures	3
Autonomic	
Crocodile-tear phenomenon	3
Auriculotemporal	1

Discussion

This study shows that PFP, especially Bell's palsy, is not uncommon in this environment. The sex ratio and the predominance between the third and fourth decades in our patients conform to the pattern from other environments (Parks & Watkins, 1949; Leibowitz, 1966). The frequency of Bell's palsy in this series is also similar to the reported range of between 50% and 87% from other environments (Cawthorne & Haynes, 1956; Alford, Weber & Sessions, 1970; Grove, 1973) although El-Ebiary (1981) found a higher percentage (93.6%) in the series from Egypt. Although prognosis of Bell's palsy was relatively good in our patients, the incidence of those that showed no recovery is high (twelve out of ninety-three) in contrast to the experience of others (Peitersen, 1982). Conceivably, this group of patients who showed no recovery in this study might have been misdiagnosed, as complete recovery is expected in Bell's palsy (Adour, 1982; Peitersen, 1982).

The clinical features of peripheral facial paralysis in Nigerians conforms to the well-documented pattern (Brain & Walton, 1975). The relatively lower frequency of complications in this patient group compared to the experience from other series is difficult to explain. It may suggest that the nature of nerve damage in the majority of our patients was predominantly due to conduction block, which is known to have a better prognosis than denervation (McGovern & Fitz-Hugh, 1956; Anon., 1970; Taverner, 1973). The pattern of presentation and subsequent clinical course of PFP in the patients with associated hypertension was similar to that described by Merwarth (1942). The relatively older age group of our patients with PFP associated with arterial hypertension suggests that the pathogenesis of the paralysis is ischaemic in origin. Diabetes mellitus was a rare association in this study, and our incidence of 3% is markedly lower than the reported range of 12–60% (Butterfield, 1964; Leibowitz, 1966; Korczyn, 1971). The rarity of diabetes mellitus in this study confirms the impression that the pathogenesis of peripheral nerve disease in the Nigerian diabetic is more likely to be metabolic than vascular in origin (Osuntokun, 1969). The incidence of Ramsay Hunt syndrome in this environment is difficult to determine accurately as specific herpes zoster antibodies were not looked for routinely. It is not unusual for the facial paralysis seen in Ramsay Hunt syndrome to occur without associated vehicles around the ear or on the forehead but, under such circumstances, a rise in the serum antibody titre is considered to be more diagnostic (Aitken & Brain, 1933). Cranial nerve deficits are not uncommon sequelae to meningitis (Kresky, Buchbines & Greenberg, 1962; Thrup *et al.*, 1964), and the incidence of post-meningitic PFP encountered in this series is similar to previous reports on pyogenic meningitis in Nigerians (Bademosi & Osuntokun, 1976; Tugwell, Greenwood & Warell, 1976). The lower incidence of leprosy as an aetiological agent in our study, despite its high endemicity in this environment, probably reflects referral bias as patients with leprosy are seen mainly at leprosaria or related clinics in Nigeria (Alabi, pers. comm.). Otogenous facial paralysis was uncommon in this series in agreement with the experience of previous workers (El-Ebiary, 1971; Alford *et al.*, 1970; Decker, 1944), although the observed low incidence in our study may be related to an unintentional selection bias because patients with primary otogenous lesions are commonly seen by general practitioners or in specialty otolaryngologic clinics.

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