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Clinical and epidemiological study of Bell's palsy in Benghazi, Libya

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Summary

An intensive search for 2 years for patients with Bell's palsy, conducted through the polyclinics, university hospitals and physiotherapy centres in Benghazi, revealed a total of 242 cases. The average annual incidence per 100,000 population was 23.35 and the age-adjusted incidence 35.72. The incidence increased with age up to the sixth decade. Seasonal clustering was noted in the months of December and January. Hypertension and diabetes mellitus were associated in 4.1% and 7% of patients, respectively. Only four patients presented during pregnancy. Recurrent facial paralysis was encountered in 5.4% of patients and was characterized by male preponderance and a tendency to recur more frequently on the same side as the initial paralysis. Familial incidence and bilateral involvement were rare features. Twelve per cent of patients who were followed up had moderate to severe residual weakness.

Résumé

Une étude épidémiologique de la paralysie faciale à Benghazi pendant une période de deux ans et baseé sur 242 cas. La moyenne de l'incidence annuelle pour une population de 100,000 individus était de 23.35 et l'incidence avec l'adjustement d'âge était de 35.72. La fréquence la plus élevée était en décembre et janvier. L'hypertension et le diabète ont été associés dans 4.1% et 7% des cas, respectivement. Quatre patients seulement ont été auscultés pendant la grossesse. 5.4% des patients ont développé une paralysie faciale récidive surtout les males et dans la côte de paralysie initiale. L'incidence familiale et bilatérale a rarement été observeé. 12% des patients qui étaient sous surveillance médicale avaient une paralysie modéreé ou sévère et récidive.

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Introduction

Idiopathic peripheral facial paralysis, of acute onset, unassociated with other evidence of aural or neurological disease is generally referred to as Bell's palsy [1]. In spite of its frequent occurrence, controversies still exist regarding its epidemiology as well as its association with diabetes, hypertension and pregnancy [2–8]. Little information is available regarding the incidence of Bell's palsy in the African continent. The following communication is an analysis of patients with Bell's palsy seen over a 2-year period in Benghazi, Libya.

Materials and methods

The area of investigation and the epidemiological nature of the study need to be emphasized. Benghazi covers an area of 17,000 km^2 in the north eastern part of Libya, on the southern coast of the Mediterranean Sea, at a latitude of 32°N and a longitude of 20°E. The average mean temperature is 20°C (13°C in January and 25.6° in August) and annual precipitation rate is 26.5 cm [9].

In recent years, medical organization in Benghazi has become efficient. Patients are referred from the walk-in out-patient services to the four university hospitals for admission and special investigations, and to the two physiotherapy centres for physiotherapy. Private medical practice is not permitted. People are

affluent and medical care is free. In addition, state financed medical treatment abroad and a desire to obtain disability certificates for tax benefits and to evade compulsory army service make people attend the clinics even for minor problems. Neurology out-patient clinics are conducted in two of the polyclinics, 5 days a week. Patients are referred to the neurology clinic from general medical clinics or registered directly. The neurology clinics are run by the neurology unit in the Seventh April Hospital which has three qualified neurologists (R.S., K.R. and P.P.A.). The Seventh April Hospital is equipped with facilities for electroencephalography, electromyography and nerve conduction and computerized tomographic (CT) scan.

An intensive search for cases of Bell's palsy was made through the polyclinics, university hospitals and physiotherapy centres over a 2-year period from January 1983 to December 1984. All patients had a detailed neurological, general physical and ENT examination, to rule out secondary causes of facial paralysis. Fasting blood sugar estimation and radiographs of the skull were done in all the patients. Audiometry, CT scan and facial nerve conduction studies were done when indicated. Patients with facial paralysis secondary to trauma, tumours, collagenoses, infection and middle ear disease were not included. Patients who had facial palsy as a part of the Guillain-Barre syndrome, as well as those not residing in the study area, were excluded. The July 1984 Libyan nationwide official census provided the population data. The incidence rates were age-adjusted by the direct method [10], using the age and sex distribution of the population of Southern Hesse, West Germany, as the standard [11].

Results

A total of 116 patients with Bell's palsy were studied in 1983, and 126 in 1984. They constituted 87.7% of all patients with lower motor neuron facial palsy. The population of Benghazi according to 1984 census was 518,734. Hence, the annual incidence rate per 100,000 population was 22.4 in 1983 and 24.3 in 1984, the average annual incidence being 23.35. The average annual age-adjusted incidence rates were 33.3 for male, 38.02 for female and 35.72 for the entire population. The monthly incidence is shown in Fig. 1. A higher incidence was noticed in the months of January and December. In January and December 27.7% of patients had the onset of the facial palsy, while 46.7% had the onset in the 4-month period from November to February.

The age of the patients ranged from 3 to 75 years with a mean of 33.1 ± 17.6 (± SD). One hundred and seventy patients (70.3%) were aged between 10 years and 49 years. The age- and sex-specific and adjusted incidence rates are provided in Table 1.

One hundred and twenty-three patients were men and 119 were women. The right side was involved slightly more often than the left (128:115 including the patient with bilateral facial palsy). Hypertension featured in 10 patients (4.1%) and diabetes mellitus in 17 (7%). Above the age of 40 years, 10.6% of patients with Bell's palsy had hypertension and 18.8% had diabetes. Four patients were pregnant among whom one had the paralysis 5 days before delivery and one each in the 20th, 28th and 34th week of gestation.

Thirteen patients (5.4%) had recurrent Bell's paralysis. The mean age of these patients was

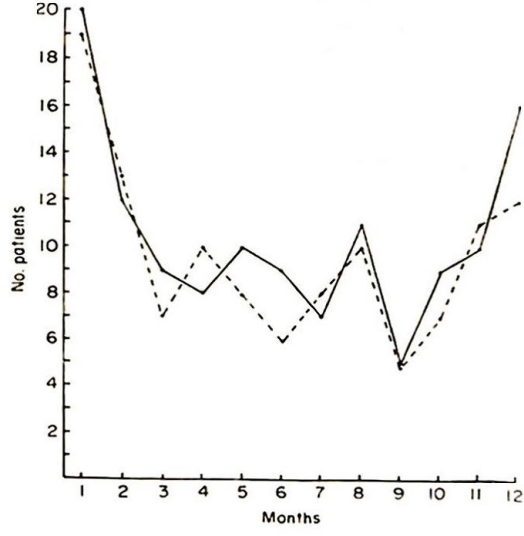

Fig. 1. Monthly incidence of Bell's palsy in 1983 (● - - ●) and 1984 (● — ●). Months 1–12 represent January to December.

Table 1. Age- and sex-specific incidence rates of Bell's palsy per 100,000 population per year in Benghazi

Age group (years)	Male			Female			Total	
	No. patients	Population	Rate	No. patients	Population	Rate	No. patients	Rate
0–9	9	101,931	4.4	8	98,765	4.05	17	4.24
10–19	25	57,193	21.85	20	52,107	19.2	45	20.6
20–29	23	33,164	34.7	25	31,866	39.25	48	36.9
30–39	19	25,846	36.75	19	24,652	38.55	38	37.65
40–49	20	21,123	47.35	19	18,424	51.55	39	49.3
50–59	13	12,300	52.85	16	10,639	75.2	29	63.2
Over 60	14	16,037	43.65	12	14,687	40.85	26	42.3
Total	123	267,594	23	119	251,140	23.7	242	23.35
Age-adjusted rates			33.3			38.02		35.72

31.4 ± 13 years. Ten were male and three female. Nine had the recurrence on the same side and four on the opposite side. The mean interval between the recurrences was 4.5 ± 1.9 years. Three patients had three episodes each, while the others had two episodes. None had diabetes, collagenosis or sarcoidosis. Two had lingua plicata and recurrent facial oedema suggestive of Melkersson-Rosenthal syndrome. ENT examination, audiometry and peripheral nerve conduction studies were normal in all. Five patients had computed tomographic scans with normal results. Tomography of the facial canal was done in two patients with negative results.

Two siblings aged 8 and 9 years from a single family had Bell's paralysis and made good recovery. The solitary patient with bilateral Bell's palsy had no motor weakness, sensory or reflex disturbances in the limbs and the cerebrospinal fluid examination was normal. Two elderly patients had associated ischaemic optic atrophy and one had meralgia paresthetica.

Corticosteroid therapy was tried in all patients presenting within the first week with complete facial paralysis, except those with diabetes mellitus or other contraindications. Among 152 patients who could be followed up, 18 had moderate to severe weakness 3–18 months after the onset, which included six patients with recurrent Bell's palsy. The rest improved satisfactorily.

Discussion

The average annual incidence of 23.35 per 100,000 population is higher than the previous studies, including the population study at Rochester which recorded an incidence of 22.8 [2,5]. The difference is more striking when the incidence is age-adjusted. The incidence reported above indicates the rate in the population who were in contact with the medical treatment system and the true incidence in the community may be slightly higher. In spite of all incentives for patients to seek early medical attention, a few cases with a mild paralysis may not have come to the clinic. Although population based studies are not available from Africa, Osuntokun [12] recorded a frequency of 0.48/1000 in a hospital population. The incidence was lower in children and increased with age up to the sixth decade. Hauser *et al.* [5] also noticed a similar increase in incidence with age.

A higher incidence of Bell's palsy was observed in the months of December and January. Seasonal clustering in the months of August and December has been recorded by El Ebiary [4] while Leibowitz [3] and Vassallo and Galea-Debono [13] reported apparent clustering of cases revealed by statistical analysis suggesting 'epidemics' of Bell's palsy. However, Hauser *et al.* [5] found no seasonal variation.

The prevalence of hypertension in patients with Bell's palsy in the present series is lower than those reported earlier. Hypertension has

been recorded in 8% of patients in Rochester [5], 36% of patients aged over 40 years [13] and in 7% of children with facial palsy [14].

The prevalence of diabetes mellitus in our study resembles that of Aminoff and Miller [1] who found glucose intolerance in 6% of cases of Bell's palsy. Pecket and Schattner [15] observed diabetes in 39% of patients while Korczyn [7] documented abnormal glucose tolerance test in 66% of patients.

No correlation of Bell's palsy with pregnancy was noted. This is in agreement with the findings of Hauser *et al.* [5] and contrary to the report of Korczyn [6], who observed a correlation particularly in the time near parturition. Hilsinger *et al.* [16] concluded that Bell's palsy occurs 3.3 times more frequently during pregnancy.

Recurrent facial palsy was observed in 5.4% of our cases. These patients appear to be a distinct entity and none had evidence of diabetes, generalized neuropathy or familial tendency. The explanation for the higher frequency of recurrence on the same side as the initial episode and the male preponderance is unclear. Recurrent facial paralysis has been noted in 2.6–15% of patients with Bell's palsy [17].

Bilateral involvement and familial occurrence were noted very rarely in this study, although familial incidence has been reported in 2.4–28.6% of cases with Bell's palsy [18]. Unsatisfactory outcome in the form of poor recovery, contracture or crocodile tears have been noted in 10–15% of patients [5, 19]. Such an outcome was observed in 12% of all cases and 46% of patients with recurrent facial palsy in our study.

The explanations for the higher incidence of Bell's palsy and the seasonal clusterings in the study area will remain presumptive till the aetiology of Bell's palsy is established with certainty. Population-based studies from areas with a similar environmental and genetic background may provide helpful clues regarding the aetiopathogenesis of the disorder.

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