AETIOLOGICAL AND EPIDEMIOLOGICAL FACTORS IN FACIAL PALSY

(ANALYSIS OF 243 CASES)

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The aetiology and pathogenesis of facial palsy has been a great puzzle and a source of controversy for over a century ever since Sir Charles Bell (1821) elucidated the function of the facial nerve and gave the classical description of the palsy that bears his name to the present day. Though Bell appeared to inculpate draught as the cause in one of his cases, the aetiology has remained uncertain and a subject of great interest.

The present study is an analysis of a series of patients with facial palsy referred to St. Luke's Hospital during the six year period extending from October 1965 to October 1971. The vast majority of the patients' records collected were from the Medical, Paediatric, Orthopaedic, E.N.T. and Physiotherapy Departments. The records were analysed with special reference to: onset of symptoms, age, sex, side of palsy, date of referral to hospital, town of origin and referring doctor. A history of hypertension and diabetes mellitus, previous occurrences of facial palsy and any other relevant illness were also recorded. All patients with a history of ear disease, trauma and gross local pathological changes were excluded from our series. We classed as hypertension a diastolic reading of 105 mm.Hg or over and we accepted as diabetics those patients who already gave a confirmed history of Diabetes mellitus or who demonstrated an abnormal G.T.T., if glycosuria was discovered when they came to hospital with their facial palsy. We noted the place of origin of the patients and it was observed that cases were fairly well distributed — the highest numbers coming usually from the most populated places.

Table I

Commonest localities		*No. of patients with Facial Palsy*
Sliema	(21,423 pop.)	17
Birkirkara	(17,579 pop.)	16
Qormi	(15,669 pop.)	18
Paula	(11,987 pop.)	14
Marsa	(9,822 pop.)	12
Senglea	(4,825 pop.)	11
Zebbug	(8,283 pop.)	11
Cospicua	(9,191 pop.)	11
Valletta	(15,432 pop.)	8
Hamrun	(14,890 pop.)	9
Luqa	(5,457 pop.)	7
Zejtun	(10,584 pop.)	6
Floriana	(4,972 pop.)	6

The total number of patients reviewed for the whole period was 243, and the number of patients attending every year was about 40.

Table II

Facial Palsy — Yearly Incidence

1966	40 cases
1967	40 cases
1968	46 cases
1969	35 cases
1970	42 cases
1971	40 cases

There was no significant difference in the frequency of the side affected, 52% had right sided facial palsy, whereas 48% had left sided facial palsy. 129 (53%) of our patients were males and 114 (47%) were females. The sex distribution was also compared with that in other series because of the recent Egyptian reports of facial palsy developing more often in females ((El Ebiary, 1971).

Table III
Sex Distribution (%)

	Females	*Males*
Our Series	47	53
Waterman (1909)	48	52
Cawthorne and Haynes (1956)	51	49
El-Ebiary (1971)	56	44

The age groups of the Maltese patients were also analysed and compared with those in some other studies.

Table IV
Age Groups

	Alexandria		*London (Cawthorne)*		*Malta*	
10	100		3		14	
11-20	143	67%	30	51%	38	48%
21-30	86		71		33	
31-40	77		77		30	
41-50	66		87		34	
51-60	46	33%	51	49%	43	52%
61-70	20		28		33	
71-80	3		5		11	

It will be noted that as many as fifty-two (21.4%) of our patients were below the age of twenty — a finding which is at variance with the views of such authorities as Walshe (1963) who considered facial palsy in the young to be relatively rare. An even more strikingly high incidence in the young is seen in the Alexandria series where 42% of facial palsies occurred below the age of 20 (El-Ebiary, 1971). Our age group incidence approximates that of Cawthorne and Haynes (1956) — 48% our patients being less than 40 years old.

The present series was also compared with that of Alexandria and of a London teaching hospital in order to establish the relative prevalence of Bell's Palsy in Malta, as interest has arisen during the last year in the medical journals on geographic variations in prevalence. These variations may throw light on possible environmental causative factors. El-Ebiary (1971) also compared the Alexandria figures with those of the Royal Free Hospital in London, which is held to serve a population of approximately one million. He concludes that the prevalence in Alexandria is approximately twenty times greater than it is in London and twice as much as it is in Cairo. Careful consideration of the figures quoted by El-Ebiary (1971) shows that the prevalence rate was based on the apparent population served. (2,000,000 for Alexandria, and 1,000,000 for the Royal Free Hospital). A more accurate estimate of the prevalence rate may be reached by basing one's calculations on the ratio of the yearly incidence of facial palsy patients attending hospital to the total number of outpatients in a year.

Table V
Geographical Incidence of Facial Palsy

	Malta	*Alexandria (El-Ebiary)*	*Royal Free Hospital (El-Ebiary)*
No. of Facial Palsies per year	40	538	20
Total No. of Hospital Outpatients	48,000	500,000	25,000
Incidence per 10,000	8.6	10.7	8.0

These figures disprove the apparent striking variation in geographical incidence of facial palsy which has recently been claimed.

Seasonal Incidence

This has always been one of the most controversial and debated points in aetiology and perusal of the literature shows that many observers hold diametrically opposite views. Thus several authors could

find little difference between the warm and cold seasons (Kettel, 1959; Bernhardt, 1892; Waterman, 1908), while others (Merwarth, 1949; Hilger, 1949), thought palsy was commoner in the winter months. Our analysis of monthly incidence for the whole six year period did not reveal any significant difference if the age of our patients was not taken into account. Because of the possible rôle of aggravating factors such as atherosclerosis, in the aetiology of facial palsy, we analysed the monthly incidence after sub-dividing our series into two equal sub-groups — the over-40 group and the under-40. No statistically significant difference could be found in the incidence when the over 40 years old group was analysed as to monthly incidence. When however the under-40 group was considered seasonally (summer and winter), a statistically significant difference ($p < 0.05$) was detected. There would, therefore, appear to be a *prima facie* different aetiological factor acting in the winter months in the younger in contrast to the older age group. As the possibility arises that this preponderance of attendance of the younger age group during the winter months might have been due to a local reluctance of older patients to attend as out-patients in inclement weather, we further analysed by way of control the ages of all new patients attending various medical and surgical outpatients departments for two weeks in a winter month (January) and two weeks in a summer month (July).

Table VI

Control Out-Patients Attendance

	Under 40	*Over 40*
Summer (2 week period in July)	225	183
Winter (2 week period in January)	132	118

Though we found fewer patients attending in the winter months, this did not affect the older age group to a greater extent than the under-40 group — thereby excluding this artifact .We also analysed climatic parameters such as wind, rainfall, average hours of sunshine and temperature but were unable to prove definitely any relationship with the greater incidence of facial palsy in our younger age groups during the winter months. One could not exclude a common environmental factor, such as a viral infection, acting in this period preferentially in the younger age groups.

Hypertension

Recently, attention has been focussed on the rôle of hypertension and diabetes mellitus in the aetiology of facial palsy. A vascular-ischaemic lesion in the pathogenesis of the condition has often been postulated (Cawthorne and Haynes, 1956; Merwarth, 1942; Liebowitz, 1966); these authors found a high incidence of peripheral facial palsy in hypertensive vascular disease.

The sub-division of our 243 patients with facial palsy into the over-40 and under-40 year olds showed a striking difference in the incidence of hypertension in the two sub-groups. There were only 5 hypertensive patients in the under-40 group, whereas 44 out of 121 patients in the over-40 group were hypertensive — a proportion of over 36%. We felt that we could justifiably use as a control Maltese population, the older age group analysed in 1970 in the Malta Case Study, in order to rule out any undue incidence of hypertension in the general population. We emphasize that our figure of 36% is most probably an underestimate of the prevalence of hypertension in our sample. Chi Square analysis between our sample and the Maltese Control Population shows a probable significance ($p < 0.05$) indicating that hypertension is also associated in the aetiology of facial palsy.

Diabetes Mellitus

Korczyn (1971) has recently claimed to have found diabetes mellitus in 66% of 130 patients he studied who had facial palsy. These striking figures are in complete contrast with the large Egyptian clinical study of patients with facial palsy where only 1% of patients were classed

as diabetics (El-Ebiary, 1971). Various other authors have, over the years, also pointed to an apparent association of diabetes with facial palsy, though the percentage of diabetics in their series is much lower. Thus Liebowitz found that 5% of his patients with facial palsy had diabetes (1966). Adour and Bell (1971) in a detailed study of 439 patients found that 10% were diabetics while 20% had a family history of diabetes. A feature that has also been stressed and should be more widely known is that neuropathy may be the initial clinical manifestation of diabetes unattended by hyperglycaemia and glycosuria (Ellenberg, 1960; 1961). We found overt diabetes to be present in 35 of our 121 patients aged over 40, a percentage of 29%. Only 1 of our patients out of 115 in the under-40 group had overt diabetes. Again, comparison with the Malta Case Study figures for diabetes in the older age groups shows a statistically significant higher incidence of diabetes in the facial palsy population ($p < 0.05$).

It is important to note that our diabetic patients were overt diabetics and no attempt was made to analyse the rest of the population sample by glucose tolerance tests.

Analysis of Korczyn's paper (1971) shows that only 13% of these patients had presented with overt diabetes initially, the other diabetic patients being detected by abnormal glucose tolerance tests. We would like to emphasize this interesting relationship of facial palsy with diabetes and hypertension in view of the increasing vogue for using high dosage of steroids in the management of facial palsy (Taverner, Cohen and Hutchinson, 1971).

In conclusion, we feel we have produced enough evidence in favour of more than one single aetiological or epidemiological factor in Bell's palsy. There are probably no significant geographical variations In the older age groups, however, atherosclerosis, diabetes and hypertension are postulated as aggravating factors. Underlying diabetes and hypertension should, therefore, be excluded in patients with Bell's Palsy, all the more so, because of the increased risks, if such patients are treated with steroids.

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