

Aetiological Profile of Peripheral Facial Paralysis in Rural Area

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Abstract

Aims: To study Aetiology of lower Motor Neuron facial paralysis in rural area. *Settings and Design:* Prospective cross sectional study. *Methods and Material:* Total 78 patients presenting with LMN type of facial paralysis to ENT OPD from Nov 2013 to Nov 2015 were included. Detailed evaluation to find aetiopathogenesis, age and sex distribution, severity at presentation in different aetiologies was carried out. *Results:* Bells paralysis was commonest aetiology in present study, followed by otitis Media. Trauma was only third aetiological factor. Vehicular trauma leading to facial palsy was found in males only. Common age of presentation was 21-40 years however patients with Herpes zoster presented in 40-60 age group. Traumatic facial palsy was more common in 31-40 age group. Patients with Bells paralysis presented with lower HB grades while those with otitis Media, Herpes zoster and trauma presented with higher grades of palsy at presentation. *Conclusion:* Aetiological Profile of patients with facial palsy is markedly different in rural area Otitis Media is still an important cause of facial palsy with patients presenting late in course of disease. Tuberculosis is still rarely seen as cause of facial palsy and trauma is more common cause of facial palsy in males.

Keyword: Facial Nerve Paralysis; Bells Paralysis; Aetiology.

Introduction

Facial Nerve Paralysis is a common clinical condition encountered by otorhinolaryngologist. It is most susceptible to injury because of its complex course the temporal bone in proximity to various structures which are frequently the site of disease. Patients who suffer from facial paralysis experience not only functional consequences, but also the psychological impact of a change in self-image and impaired communication ability [1].

More than 40 different causes of facial paralysis are known having different management protocols ranging from watchful expectancy to urgent surgical

exploration. The aetiological profile of patients changes according to population under consideration. It seems essential to know aetiological profile of facial paralysis in particular area. The present study was carried out with the aim of understanding aetiology of Lower Motor Neuron Facial paralysis presenting to ENT department in Rural teaching hospital.

Material and Methods

The present clinical study was a Prospective time bound study undertaken to evaluate patients with lower motor neuron type facial nerve paralysis in rural area. The study includes 78 patients presenting ENT OPD having Lower Motor Neuron facial paralysis. In all cases a detailed clinical history was elicited and physical examination was carried out to identify cause and severity of facial nerve paralysis. The date and time of onset were noted. The severity of facial paralysis was assessed clinically according to House-Brackmann (HB) scale. All patients underwent Topo-diagnostic tests and Pure Tone Audiogram (PTA) was done. Radiological investigations including X ray and CT Temporal bone were carried out in indicated cases to arrive at Diagnosis.

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All data was recorded in pretested proforma and appropriate statistical analysis was performed.

Observations and Results

Total 78 cases of LMN facial paralysis presenting to Department of ENT during the study period were included. All the cases underwent detailed history collection, thorough clinical evaluation and necessary investigations to identify the aetiology of facial paralysis.

The average age of patient was 38.51, there were 41 males and 37 females with M: F ratio of 1.1:1, right side was affected in 37 as compared to left side in 41 patients

The most common etiology was Bell’s palsy in 45 (57.69%) patients, followed by Otitis Media in 15.38%. The neoplastic group included in malignant parotid

neoplasm 2 (2.56%) and Vestibular Schwannoma and Leukemia 1 (1.28%) each. There was one patient of Tuberculosis and one patient with congenital LMN facial paralysis (Table 1).

Traumatic facial paralysis included 8 patients with vehicular accidental trauma while 1 patient had iatrogenic trauma at time of mastoidectomy and 1 had electrical burn (Table 2).

Though majority of patients presented in age group of 20-40 yrs. There was no statistically significant difference in age and sex distribution among patients with different aetiologies (Table 3).

In the present study, maximum patients presented with House Brackmann grade III 27 (34.67%). Minimum numbers of patients were of HB grade VI 2 (2.56%). However, patients with Bells paralysis had lower grade palsy at presentation while those with HZO, Otitis Media and trauma had severe palsy at presentation.

Table 1: Distribution in patients with LMN Facial Palsy according to Aetiology

Sr. No	Cause of Facial Paralysis	No. of cases	Percentage
1	Idiopathic (Bell’s Palsy)	45	57.69
2	Traumatic	10	12.83
3	CSOM	7	8.97
4	ASOM	5	6.41
5	Herpes Zoster	5	6.41
6	Neoplastic	4	5.13
7	Congenital Facial Palsy	1	1.28
8	Tuberculosis	1	1.28
	Total	78	100

Table 2: Distribution of patients according to aetiology in traumatic facial nerve paralysis

Type of Injury	No. of cases	Percentage
Accidental trauma	8	80
Iatrogenic trauma	1	10
Other (electrical burn)	1	10

Table 3: Distribution of patients according to Age and sex in different Aetiology

Age Group Yrs		BELLS palsy			Otitis Media			Trauma			Herpes Zoster		
		M	F	T	M	F	T	M	F	T	M	F	T
0 - 20	N	4	3	7	0	3	3	1	0	1	1	0	1
	%	17.39	13.64	15.56	0.0	42.85	25.0	12.5	0.0	10.0	33.3	0.0	20.0
20-40	N	8	9	17	2	1	3	4	2	6	1	0	1
	%	34.79	40.90	37.78	40	14.29	25.0	50.0	100.	60.0	33.3	0.0	20.0
40-60	N	6	5	11	0	2	2	3	0	3	0	0	0
	%	26.08	22.73	24.44	0	28.57	16.67	37.5	0.0	30.0	0.0	0.0	0.0
>60	N	5	5	10	3	1	4	0	0	0	1	2	3
	%	21.74	22.73	22.22	60	14.29		0.0	0.0	0.0	33.3	100	60.0
Total	n	23	22	45	5	7		8	2	10	3	2	5
	%	100	100	100	100	100		100	100	100	100	100	100

- Patients with tumour (4) and others (2) not included as number is too low.
- Statistically significant difference in age group <40 and more than 40 in traumatic palsy. (chi square 0.23, P value <0.5).

Table 4: Distribution of House Brackmann grading in Patients with LMN Facial Palsy

HB Grade	Bells Palsy		Otitis Media		Trauma		HZO		N	%
	N	%	N	%	N	%	N	%		
II	09	20.00	00	0.00	00	00	00	00	01	16.66
III	21	46.67	03	25.00	02	20	00	00	01	16.66
IV	12	26.67	05	41.67	03	30	02	40	02	33.33
V	03	6.67	04	33.33	05	50	02	40	01	16.66
VI	00	00	00	00	00	00	01	20	01	16.66
Total	45	100	12	100	10	100	05	100	06	100

Statistically significant difference in severity of presentation HB grade >4 and <4 in Bellspalsy(chi square 17.44 P<0.01) and traumatic palsy (Chi square 13.23, P<0.01)

Discussion

Age Distribution in LMN Facial Paralysis

In the present study, maximum number of patients were in the age group 21 to 40 years 29(37.2%), Youngest patient was of 5 years' age and the eldest was 85 years old. Venugopal et al. in his study of 60 patients in April 2011 reported that majority of patients i.e. 24(40%) belonged to the age group 21-40 years which is analogous to present study.

Gender Distribution in LMN Facial Paralysis

In the present study, LMN facial palsy was more common in male 41(52.56%) patients with male

female ratio 1.1:1, which was statistically not significant. There was no statistically significant difference in male and female affected with LMN facial palsy in different age groups also. Statistically insignificant male Preponderance amongst patients with facial paralysis has been described in different studies [2,3].

Aetiology in LMN Facial Paralysis

Bell's Palsy was commonest cause of facial palsy (57.69) in present study (Fig 1). The different aetiologies of facial palsy as reported in literature are given below.

Sr. No.	Cause	Mark May et al ^[4]		Venugopal et al ^[2]		Present study	
		No	%	No	%	No	%
1	Bell's palsy	1082	55	14	23.3	45	57.69
2	Trauma	375	19	25	41.7	10	12.83
3	HZO	145	7	3	5	5	6.41
4	Tumour	126	6	8	13.3	4	5.13
5	Infection	78	4	9	15	12	15.38
6	Birth trauma	62	3	-	-	-	-
7	Others	44	2	1	1.7	2	2.56

Mark May et al. (1986) [4] reported Bell's palsy was seen 55% of their patients whereas in present study it was 57.69%. Bell's palsy as most frequent aetiology of LMN facial paralysis has also been reported by May and Klein et al [5] (64%) which is parallel to our study.

The second most common cause of facial palsy in present study was ear infection in (15.2%). Similar figures have been quoted by Venugopal et al [2]. Lower incidence (4% and 1.7%) of CSOM as aetiology of facial palsy has been reported by Mark May et al. (1986) [4], and Altuntas et al [6], respectively. The high incidence of facial palsy secondary to infection in present study and that by Venugopal et al [2] may be because, these are based in developing country and rural area as against other studies by Mark May

et al [4] and Altuntas et al [6]. Which are from developed countries. Amongst patients with Facial paralysis secondary to otitis media 7 had CSOM while 5 had ASOM. Complications of ASOM have decreased because of antibiotics. However Uncomplicated CSOM may still present with complications.

The third common cause of LMN facial palsy in present study was trauma in 13% of patients (Figure 2). Mark May et al [4] and Guerrisi [7] also reported that 19% and 17% of facial palsy respectively was secondary to trauma in their studies respectively. Both of these studies are analogous to present study.

Even Among the Indian studies trauma is reported to be second most common aetiology of facial paralysis, however it is third common cause of palsy

in present study. The geographical location away from major Highways might be the reason for the same.

In present study, 5 cases (6.3%) of herpes zoster Oticus were found with ratio of idiopathic facial nerve palsy to herpes zoster palsy was 9:1. (Figure 3).

The incidence of herpes zoster in patients with peripheral facial palsy is 4.5%–8.9% [8]. Compared with Bell palsy, Ramsay Hunt syndrome generally has more severe paralysis at onset, and patients are less likely to recover completely [9].

Mark May et al [4] reported that Herpes Zoster was the third most common cause i.e. (7%). Herpes zoster was also nearly equally common in present study



Fig. 1: Bells palsy



Fig. 3: Hepes Zoster with facial palsy



Fig. 2: Traumatic facial palsy



Fig. 4: Facial palsy due to leukemia

i.e. (6.41%). May and Klein [5] and Venugopal, et al [2] listed the incidence of the same as 7% and 5% respectively in patients with facial palsy, which is comparable with present study.

Facial nerve paralysis secondary to neoplasm was seen in present study in 5.13% patients. Leukemia (1) Figure (4), malignant parotid tumour (2) and Acoustic neuroma (1) were neoplastic causes of facial palsy May et al [4] and Venugopal, et al [2] reported the facial nerve paralysis secondary to neoplasm to be (6%) and (13.3%) respectively, which are analogous to present study.

LMN facial paralysis secondary to Tuberculosis is rarely found. In present study there was one patient of facial palsy with Tuberculosis.

Venugopal, et al [2] also reported one case of LMN facial palsy with Tuberculous otitis media. Pietersen E et al [10] reported one case of facial paralysis with Tuberculosis in his study comprising of 2500 cases.

In present study, there was one patient of congenital LMN facial paralysis. Patient had facial palsy since birth, and also had macrotia with unilateral facial palsy. Pietersen E [10] reported some congenital abnormalities and facial nerve palsies in neonates.

The majority of cases suffer from Treacher-Collins syndrome. The other children had multiple defects or chromosomal abnormalities with one-sided or bilateral palsies.

Age and gender Distribution in Different Aetiologies

Commonest age group for Bells palsy was 21-40 years, with female to male ration of 1:0.8 which was statistically not significant. May M et al [4] and Pieterse et al [10] have noted similar findings as far as age and gender distribution are concerned.

In present study 60% patients with Herpes Zoster Oticus belonged to age group more than 40 years. Pieterse et al also reported that 74% of their patients with HZO were more than 45 yrs of age. There were 3 males and 2 females. With M:F ratio of 1:0.6. In contrast to present study Pieterse E. et al (2002) [10], in their study of 116 patients with peripheral facial nerve palsy reported M:F ratio of 1:1.2 among pts with Herpes Zoster.

Among patients with otitis Media nearly half, 6 (50%) patients belonged to age group of more than 40 years. While majority were females 7 (58.34%) with male to female ratio of 0.7:1. These findings correlate with those of Jin Kim et al [9] who found average age

of 44 yrs amongst Patients with OM with facial palsy with M:F ratio 0.7:1

All the patients with Facial Paralysis due to Trauma were in 31-40 age groups. In present study traumatic facial palsy was significantly more common in age group less than 40 as compared to age group more than 40 (chi square 0.23 P value <0.5 statistically significant). High incidence of traumatic facial palsy in fourth decade in life has been noted by Jin Kim, et al [9]. There were 8 males against 2 females. Majority of trauma in present study were of Vehicular accidents. The finding may point social factors but it needs to be studied further. This is in contrast to reports by Jin Kim et al [10] who found no gender predisposition for traumatic Facial palsy.

House Brackmann Grading on Presentation in Patients with LMN Facial Palsy

In the present study maximum patients presented with House Brackmann grade III 27 (34.67%) while Minimum numbers of patients were of HB grade VI 2 (2.56%)

Venugopal, et al [2] in their study of 60 patients in April 2011 showed that the majority reported with HB grade III palsy (30%), followed by grade IV palsy (25%), whereas Volk GF et al [12] reported that maximum patients presented with House Brackmann grade IV (33%) followed by HB grade III (29%), II (25%) and HB grade V (9%). Minimum numbers of patients were of HB grade IV (6%). Both studies are analogous to present study. Patients with bells palsy and trauma presented with less severe paralysis HB grading less than 4 (chi square 17.74 and 13.23 respectively p value 0.01).

However Herpes Zoster presents a different picture, all patients with HZO presented with more than grade IV paralysis of House Brackmann scale. Similar reports of severe paralysis at presentation among Pts with HZO have been reported by Pieterse et al [10] and Devriese et al [11].

Surprisingly Patients with paralysis secondary to otitis media presented with more severe paralysis of grade IV 5 (41.67%), grade V 4 (33.33%) In facial palsy secondary to otitis Media the pattern is usually of slowly progression worsening within a week Jin Kim, et al [9]. the fact that patients with aural symptoms where is no question of missing diagnosis still presented with delayed palsy may indicate negligence or non availability of medical facilities leading to late presentation to hospital, suggesting neglect because of poverty and illiteracy in rural population.

Summary and Conclusions

The present study was a prospective study conducted on 78 patients with lower motor neuron facial paralysis at Rural teaching hospital. Maximum number of patients were in age group 20-40 years. With youngest being 5 yrs of age and eldest was 85 yrs of age. M: F ratio was 1.1:1

Bells paralysis was commonest cause. Otitis Media was second most common cause of facial paralysis in contrast to reports from developed world where trauma is second most common cause of facial paralysis. Patients with Otitis Media presented with more severe facial paralysis as compared to other studies. Traumatic facial paralysis which is second most common cause of facial palsy was third common cause in rural population. There was clear male predominance contrary to world literature among patients with traumatic palsy. We encountered one patient with Facial palsy secondary to Tuberculosis. Which is very rare.

Commonest age group of Bell's palsy was 21-40 years while the same was more than 40 years in otitis Media as well as HZO. Traumatic patients presented in age group 31-50. There was no gender predilection in various aetiological groups except in traumatic where males grossly outnumbered females. This is in contrast to other urban based studies from developed world.

The severity of paralysis on presentation in all aetiological groups was in keeping with trends to world literature except in otitis Media where the patients present late and with severe palsy. All aetiological groups except Bells paralysis presented with higher HB grading suggesting severe facial palsy. To conclude aetiological profile of patients with facial palsy differs greatly in rural population. Otitis Media is still one of important cause of facial palsy and present comparatively severe paralysis, tuberculosis is still encountered albeit rarely and profile of trauma is different with more male predilection.

References

1. Philip AW, John SR. Facial paralysis. Ballengers otorhinolaryngology, Head and Neck Surgery, 16th ed, Snow JB, Ballenger JJ. BC Decker Spain 2004: 489-519.
2. Venugopal M, Rajan S, Suma R, Thomas S. Etiopathogenesis of lower motor neuron facial palsy: Our experience. Indian J Otol, 2011;17(2):58-62.
3. Ayala Mejias A, Casqueiro Sanchez JC, Durio Calero E, Sanz Fernandez R. Peripheral facial palsy. Descriptive study at the university hospital in Getafe. ActaOtolaringolEsp, 2007;58(2):52-55.
4. Mark M, Barry M S, Michael P, Jurg U, Erik P, Susan RK, Idiopathic Palsy, Herpes Zoster Cephalicus and other facial nerve disorders of viral origin. The Facial Nerve Second Edition, Thieme, New York 2000:319-338.
5. May M, Klein SR: Differential Diagnosis of Facial Nerve Palsy. OtolaryngolClin North Am. 1991; 24(3):613-645.
6. Altunlas A, Nal A, Aslan A, Ozcan M, Kurkcuoglu S, Nalca Y: facial nerve paralysis in CSOM: Ankara Numune Hospital Experience. AurisNasus Larynx. 1998;25(2):169-72.
7. Guerrissi JO. Facial nerve paralysis after intratemporal and extratemporal blunt trauma. J Craniofac Surg. 1997;8(5):431-437.
8. Savic DL, Djemic, DR: Facial paralysis in CSOM. Clinical Otolaryngology 1989; 14:515-17.
9. Jin Kim, et al. Facial Palsy in Chronic Otitis Media; Yonsei Medical journal 2012;53(1):642-648.
10. Pietersen E. Bell's palsy: The Spontaneous Course of 2500 Peripheral Facial Nerve Palsies of Different Etiologies. ActaOtolaryngologica. 2002;Suppl549:4-30.
11. Devriese PP, Moesker WH. The natural history of facial paralysis in herpes zoster. Clinical Otolaryngology and Allied sciences. 1988;13(4):289-98.
12. Volk GF, Klingner C, Finkensieper M, Witte OW, Guntinas-Lichius O. Prognostication of recovery time after acute peripheral facial palsy: a prospective cohort study. BMJ Open 2013;3:e003007. doi:10.1136/bmjopen-2013-003007.