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ORIGINAL ARTICLE

Clinical Study on the Causes and Outcome of Facial Nerve Palsy at Liaquat University Hospital Hyderabad

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ABSTRACT

Background and Aim: A facial paralysis can be enormously distressing for a person. In order to restore and rehab face symmetry, it is essential to understand the source and type of nerve damage. Lower motor neuron facial paralysis was investigated in the current study to assess its various causes.

Patients and Method: This prospective study was carried out on 48 facial nerve palsy (FNP) in the Department of Medicine, Liaquat University Hospital, Hyderabad from January 2021 to August 2022. Patients diagnosed with peripheral facial nerve paralysis of any age and both genders were enrolled. Patient's details such as time of symptom onset, paralysis duration, rapidity of progression, and paralysis completeness were evaluated. Each individual was interviewed about family history, medical illness such as malignancy, tuberculosis, diabetes, autoimmune disorders, previous episodes, any prior surgery, trauma history, and related symptoms such as neurological, auditory, and vestibular. Lesion site and treatment response was administered by Topo diagnostic tests. Data analysis was carried out in SPSS version 26.

Results: Out of 48 FNP patients, 34 (70.8%) were male and female 14 (29.2%) respectively. The overall mean age was 35.8±6.2 years with an age range 5 to 70 years. Patients were distributed into different age groups as follows: 6 (12.5%) in 5-20 years, 19 (39.6%) in 21-35 years, 16 (33.3%) in 36-50 years, and 7 (14.6%) in 51-70 years. The prevalence of left and right side affected patients were 20 (41.7%) and 28 (58.3%) respectively. The most prevalent causes of FNP were idiopathic and external trauma found in 12 (25%) cases followed by infections and tumour found in 8 (16.7%) cases. Severity of paralysis calculated based on H. Brackman grading were as follows: Grade IV, V, and VI paralysis were found in 22 (45.8%), 8 (16.7%), and 2 (4.2%) respectively. Physiotherapy and conservative treatment was given to 26 (54.2%) patients followed by facial nerve surgery in 14 (29.2%) patients.

Conclusion: The present study found that External trauma and Bell's palsy are the leading causes of LMN facial nerve paralysis. The right side was more affected than the left side, and male patients predominated. Upon presentation, most lesions were suprageniculate and had House Brackmann severity scores of IV. After a one-year follow-up, most of our peripheral facial paralysis cases had recovered fully or partially.

Keywords: Facial nerve palsy, Outcomes, Causes, House Brackmann severity.

INTRODUCTION

Paralysis of the facial nerve is the most common neurological condition in the human body, affecting the patient's functionality, aesthetics, and emotional wellbeing. Traumatic injuries to the facial nerve often result in functional, cosmetic, and emotional problems for victims. Loss of wrinkling, the inability to close the eyes, and deviation of the angle of the mouth are some of the main symptoms of lower motor neuron (LMN) facial paralysis that causes distress to patients [1, 2]. Traumatic facial nerve and road traffic accidents might lead to other causal factors such as fall, gun shots, blunt trauma, and iatrogenic injury [3-5]. Acute facial nerve palsy (FNP) is the most common facial paralysis type that accounts for 46% to 69% among all the FNP cases [6, 7]. The main branches of the facial nerve are as follows: superficial petrosal nerve, parasympathetic nerve supply, Stapedius nerve, chorda tympani, and diagnostic branches [8]. Facial nerve is responsible for taste, laceration, facial emotions, acoustic reflexes, and salivation as a seventh cranial nerve [9]. The cochlea and eye could be protected by these facial nerves while assisting with communication, speech, and mastication. Facial paralysis has both practical and psychological effects for the patient, including a change in self-image and decreased conversational capacity [10].

The majority of facial nerve problems, whether traumatic, inflammatory, neoplastic, arise along its intricate intra temporal journey [11]. Although much more information has been gathered over the last two decades, numerous issues and concerns concerning the diagnosis and therapy of facial palsy remain. Newer technological advances in radiologic and electrical diagnostics, as well as the introduction of intraoperative monitoring, are assisting in the resolution of these grey zones. A long course inside a bone canal complex branching and interconnections, congenital dehiscence, and segmental blood supply are all elements that contribute considerably to the cause and result of nerve injuries. The inaccessibility of the intratemporal facial nerve to direct testing of most cases of facial palsy prevents an adequate assessment of the exact site and extent of nerve injury [12]. A limited study has been carried out on facial nerve palsy clinical outcomes in Pakistan. The current investigation was carried out to assess the various causes of lower motor neuron facial paralysis.

METHODOLOGY

This prospective study was carried out on 48 facial nerve palsy (FNP) in the Department of Medicine, Liaqat University Hospital Hyderabad from January 2021 to August 2022. Patients diagnosed with peripheral facial nerve paralysis of any age and both genders were enrolled. Patient's details such as time of symptom onset, paralysis duration, rapidity of progression, and paralysis completeness were evaluated. Congenital facial nerve palsy and patients with facial nerve paralysis caused by upper motor neuron lesions were excluded. Each individual was interviewed about family history, medical illness such as malignancy, tuberculosis, diabetes, autoimmune disorders, previous episodes, any prior surgery, trauma history, and related symptoms such as neurological, auditory, and vestibular. Lesion site and treatment response were administered by Topo diagnostic tests. Facial nerve functional assessment includes degree of voluntary movements in facial musculature including corneal response, forehead wrinkling, Bell's phenomenon, eyelid closure, mouth deviation at specific angle, and facial symmetry status. House-Brackmann classification was used for the severity of facial paralysis. Routine laboratory investigations, impedance audiometry, and pure tone were assessed clinically. In inflammatory etiologies and traumatic diseases, temporal bone CT scan and MRI scan was performed.

Different surgical procedures such as decompression, facial nerve, and end to end anastomosis were recorded. SPSS version 26 was used for data analysis. All the categorical variables were expressed as mean and standard deviation. Continuous variables were described as frequency and percentages. All the descriptive statistics was done taking 95% confidence interval and 5% level of significance.

RESULTS

Out of 48 FNP patients, 34 (70.8%) were male and 14 (29.2%) respectively. The overall mean age was 35.8±6.2 years with an age range 5 to 70 years. Patients were distributed into different age groups as follows: 6 (12.5%) in 5-20 years, 19 (39.6%) in 21-35 years, 16 (33.3%) in 36-50 years, and 7 (14.6%) in 51-70 years. The prevalence of left and right side affected patients were 20 (41.7%) and 28 (58.3%) respectively. The most prevalent causes of FNP were idiopathic and external trauma found in 12 (25%) cases followed by infections and tumour found in 8 (16.7%) cases. Severity of paralysis calculated based on H. Brackman grading were as follows: Grade IV, V, and VI paralysis were found in 22 (45.8%), 8 (16.7%), and 2 (4.2%) respectively. Physiotherapy and conservative treatment was given to 26 (54.2%) patients followed by facial nerve surgery in 14 (29.2%) patients. Gender's distribution is shown in Figure-1. Age-wise distributions are illustrated in Figure-2. Facial paralysis etiologies are depicted in Figure-3. Lesion levels are shown in Figure-4. Severity of facial paralysis and treatment offered are shown in Table-I and Table-II respectively. Different treatment outcomes are shown in Table-III.

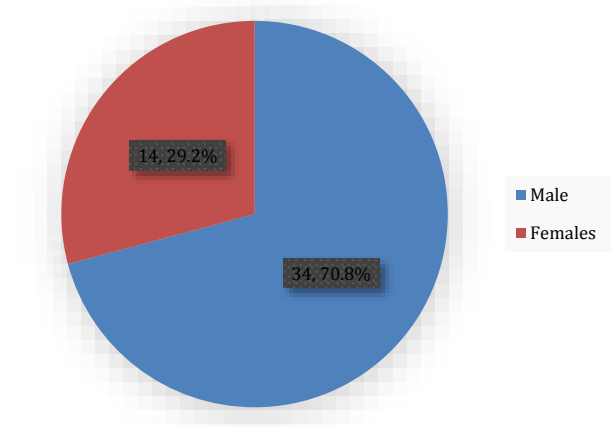

Figure-1: Gender's distribution of FNP patients (n=48)

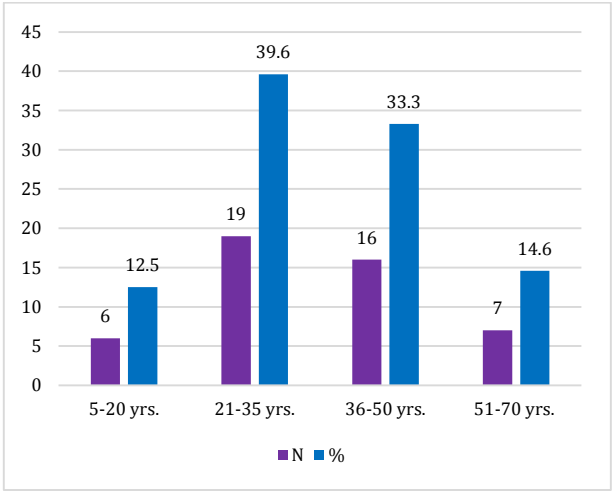

Figure-2: Age-wise distribution of FNP patients (n=48)

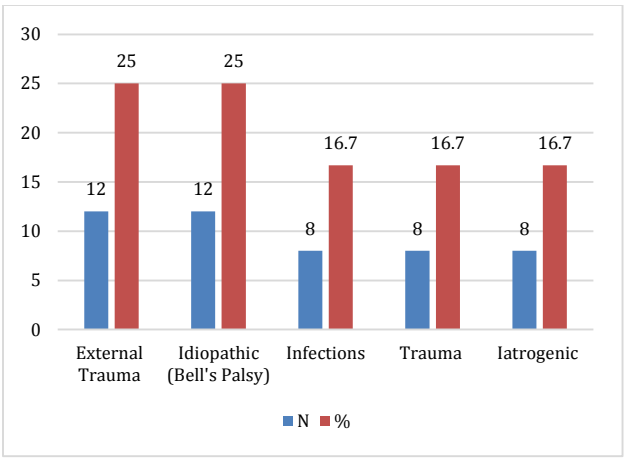

Figure-3: Etiologies of FNP patients (n=48)

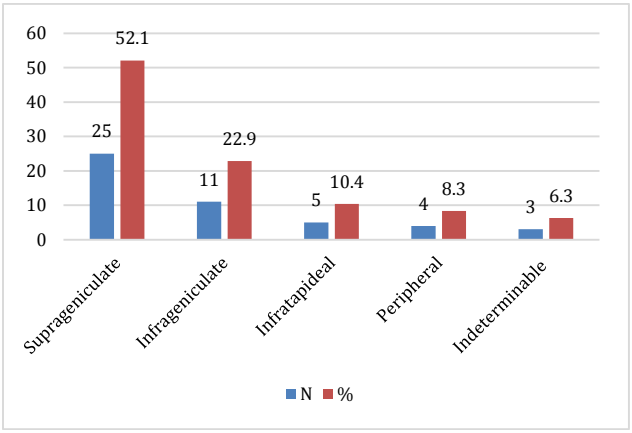

Figure-4: Levels of lesion in FNP patients (n=48)

Table-1: Severity of facial paralysis

Grades	Frequency N (%)
I	0 (0)
II	2 (4.2)
III	14 (29.2)
IV	22 (45.8)
V	8 (16.7)
VI	2 (4.2)

Table-2: Treatment offered to FNP patients (n=48)

Treatment offered	N (%)
Conservative treatment	26 (54.2)
Facial nerve surgery	14 (29.2)
Surgical procedure for tumours	4 (8.3)
No intervention	4 (8.3)
Total	48 (100)

Table-3: various outcomes of FNP patients

Outcomes	N (%)
Full recovery after FP	22 (45.8)
Partial recovery after FP	17 (35.4)
No recovery	6 (12.5)
Patients expired	3 (6.3)
Total	48 (100)

DISCUSSION

The present study mainly focused on clinical outcomes and various causes of facial nerve palsy and found that External trauma and Bell's palsy were the most prevalent causes of LMN facial nerve paralysis. The study population was predominantly male, with the right side being more afflicted. At presentation, the majority of the lesions was supragenicular and had a House Brackmann severity

score of IV. Peripheral facial paralysis responded well to therapy, and the majority of our patients recovered fully or partially after a one-year follow-up. The present study evaluated 48 patients with peripheral facial nerve paralysis to analyze etiology, demographic data, and lesion anatomical level utilizing topo diagnostic tests, surgical methods, degree of facial paralysis, and treatment response.

In our analysis, the most prevalent causes of facial nerve paralysis were idiopathic (Bell's palsy) and trauma, contributing for around 25% of cases. A previous study reported that Bell's palsy is the most prevalent cause of facial paralysis. Bell's palsy was found in 48.3% of 3454 individuals in a Yawn et al investigation [13]. Jacobsen et al [14] reported a series with a considerably bigger group of idiopathic cases ranging from 62% to 93%, which was likely attributable to the study being conducted among patients attending basic health units [15]. Shea et al [16] analyzed 2570 instances of peripheral facial nerve palsy during a 25-year period, including 1701 cases of Bell's palsy (66.2%) [17]. A previous study by Hohman et al. [18] reported that the incidence of Bell's palsy, varicella zoster, iatrogenic injuries, and congenital palsy was found in 38%, 7%, 7%, and 5% respectively.

Chronic facial palsy has been observed to affect 2.6 to 15.2% of people [19, 20]. In our studies, 64.7% of patients recovered from the initial episode, which is comparable to the 72.2% reported by Kahn et al. [21]. There is no correlation between prognostic worsening and BP relapse, however a positive family history raises the likelihood by 2.5 times [22]. DM was the most prevalent comorbidity in our BP patients, accounting for 8.5% of the cases, less than the 11.2% identified [23].

In the present study, the overall mean age was 35.8±6.2 years which is comparable to Longmire et al. [24] study on 63 cases of FNP reported that overall mean age was 41 years. Another study by Wong et al [25] found that the majority of FP cases occurred in the fourth decades of life. Santos-Lasaosa et al [26] revealed that FP patients had a mean age of 47.14 years. The prevalence of male and females in the present study was 70.8% and 29.2% respectively. The incidence of left and right side affected patients were 20 (41.7%) and 28 (58.3%) respectively. A previous study reported that 60% patients were male and right side affected patients were 58.5% [27].

In our study, the trauma and idiopathic (Bell's palsy) was found in 25% cases each. Another study by Kamran et al [28] reported that trauma cases were 23% whereas Dedhia et al [29] reported 7.8% prevalence of traumatic facial palsy. Pinna et al documented just two incidences of iatrogenic facial paralysis in a sample of 82 individuals [30]. Ciorba et al. [31] reported that the incidence of iatrogenic facial palsy linked with otology surgery is 0.6%-3.7%, increasing to 4%-10% in revision mastoid procedures. Based on therapy and treatment offered, conservative treatment and facial nerve surgery was the most prevalent one. The prevalence of conservative therapy and facial nerve surgery was 54.2% and 29.2% respectively. Surgical procedures for tumors were carried out in 8.3% cases. About 45.8% patients were fully recovered followed by 35.4% partial recovery. About 12.5% cases did not recovered at all and 6.3% patients expired during the study period.

CONCLUSION

The present study found that External trauma and Bell's palsy are the leading causes of LMN facial nerve paralysis. The right side was more affected than the left side, and male patients predominated. Upon presentation, most lesions were supragenicuIate and had House Brackmann severity scores of IV. After a one-year follow-up, most of our peripheral facial paralysis cases had recovered fully or partially.

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