

Case Study

Etiology and Clinical Presentations of Lower Motor Neuron Facial Nerve Palsy in Khartoum, Sudan

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Abstract

Etiopathogenesis of lower motor neuron facial palsy (LMN FNP) is still a diagnostic challenge and the literature has shown varying results.

Objectives: This study aims to sketch out the causes and clinical presentation of LMN FNP patients presented to ENT Khartoum teaching hospital –Sudan in the period from Jan 2014 to Jan 2016.

Materials and methods: This is a prospective hospital-based study from Jan 2014 to Jan 2016 included 83 patients presented to Khartoum ENT teaching hospital in Sudan with LMN FNP. Variables included age, gender, common presentation, diagnosis, treatment and prognosis.

Results: Eighty three patients included, their age ranged between 3-70 years with high incidence in age group (31-40) years. Two third of the patients were males (61.4%). The main presenting symptoms were sudden onset of facial palsy (67.5%) and progressive onset in (32.5%). The most frequent causes were Bell's palsy (33.7%) followed by trauma and Chronic suppurative otitis media (CSOM) (24.1%, 18.1%) respectively. Out of total, 60(72.3%) received steroids, 30(36.1%) received antiviral, 15(18.1%) received antibiotics. All patients were advised to take care of their eyes (88.0%), physiotherapy and rehabilitation (43.4%). Outcome of treatment showed response in different grade forms in 54patients (65.1%).

Conclusion: The causes of facial nerve palsy in children and adults are many, however idiopathic facial palsy or, Bell's palsy, is the most frequent.

INTRODUCTION AND LITERATURE REVIEW

Facial nerve dysfunction can severely affect a patient's quality of life. The human face is a focal point for communication and expression [1].

There are many causes of unilateral facial palsy that should be considered, including idiopathic, traumatic, infective, neoplastic, congenital, and autoimmune. Seventy per cent of facial nerve palsy is diagnosed as Bell's palsy. In 1830, Sir Charles Bell first described unilateral facial weakness secondary to facial nerve dysfunction. His description of acquired, idiopathic facial paralysis is often termed Bell's palsy. Bell's palsy is the most common cause of acute facial nerve paralysis. There is no known cause of Bell's palsy, although it has been associated with herpes simplex infection. Bilateral facial palsy is far less common and typically

represents a systemic disorder with multiple manifestations and is also the most common diagnosis in childhood and accounts for 90% of facial paralysis [2-4].

Otitis media is an infection, which it can spread to the facial nerve and, causing compression of the nerve in its canal. Antibiotics are used to control the otitis media, and other options include a wide myringotomy or decompression if the patient does not improve. Chronic otitis media usually presents with chronic discharge or hearing loss, with or without ear pain also it could be a cause of facial palsy. Once cholesteatoma suspected, there should be immediate surgical exploration and it should be suspected if the onset of facial palsy is gradual [5,6].

Physical trauma, especially fractures of the temporal bone, may also cause acute facial nerve paralysis. The facial paralysis

can follow immediately the trauma due to direct or due to oedema and inflammation. Facial nerve injury during mastoid or middle ear surgery is relatively uncommon. Extra-temporal resections, including parotid or neck tumors, may sacrifice a part of the nerve [5,7-10].

A tumor compressing the facial nerve includes facial neuromas, congenital cholesteatomas, hemangiomas, acoustic neuromas, parotid gland neoplasms, and or metastases of other tumours [11,12].

The possible causes of facial nerve palsy in children may be congenital, infectious, neoplastic, traumatic, or idiopathic. Approximately one-half of all cases qualify for the label "Bell's palsy," defined as an acute facial nerve palsy of unknown cause [13,6,14].

The most common cause of acute onset facial nerve palsy in children has in the past been acute otitis media. However, Lyme disease may be more common cause in endemic areas than otitis media, as illustrated by a study on 50 children with facial nerve palsy in Delaware. The most common etiology was Lyme disease (50%), followed by acute otitis media (12%), varicella (6%), herpes zoster (4%), and Coxsackie virus (2%). Idiopathic disease (Bell's palsy) was the diagnosis in 26%. At least one European study also found Lyme disease to be the most frequently identified cause of acute facial palsy in children, accounting for 16 of 27 cases. Bilateral facial palsy occurred only in children with Lyme disease in this study [16,17].

Ramsay Hunt syndrome is caused by reactivation of varicella zoster virus (herpes zoster oticus) and it is characterized by facial paralysis associated with a painful vesicular. HIV infection rarely causes facial palsy [18,19].

Malignant otitis externa can rapidly spread via the ear canal soft tissue to the temporal bone resulting in osteomyelitis and subsequent cranial nerve palsies [20].

Grading the severity of weakness at presentation is recommended although it is of limited value. Grading is not prognostic and not equivalent to stratified treatment protocol. The key observation whether the weakness is complete or partial and this impacts on the prognosis and the need for specialist help. Many grading systems exist but the House-Brackmann scale is the common one. Eyelid closure is an important observation as it carries the most significant functional consequence [21,3].

In cases of acute Bell's palsy, the aim of treatment is to speed the recovery and to prevent corneal complications and this to be obtained through prednisolone [22,4].

MATERIALS AND METHODS

This is a prospective hospital based study conducted in Khartoum ENT teaching hospital from January 2014 to January 2016. Khartoum city is the capital of Sudan.

Inclusion criteria

Any patient presented with facial nerve palsy being confirmed to have LMN facial nerve palsy.

Exclusion criteria

Patients with upper motor neuron facial nerve palsy.

Data collection technique

Data collected through a well-constructed questionnaire structured to cover the objective of the study. Cases were selected randomly. Data was analyzed using the statistical package for social sciences (SPSS) version 20. Data presented through Figures and percentage.

Ethical consideration

Ethical clearance was obtained from the thesis committee of the Sudan Medical Specialization Board and the hospital. Written consent was taken also from all patients (83) and their privacy information was considered by blocking names and coding the questionnaire.

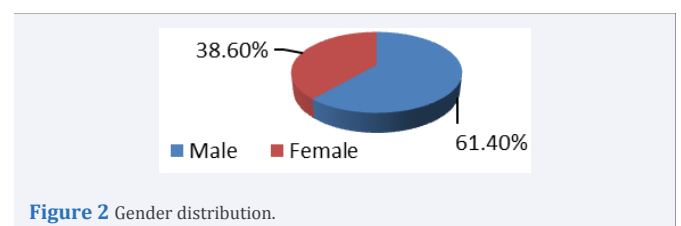
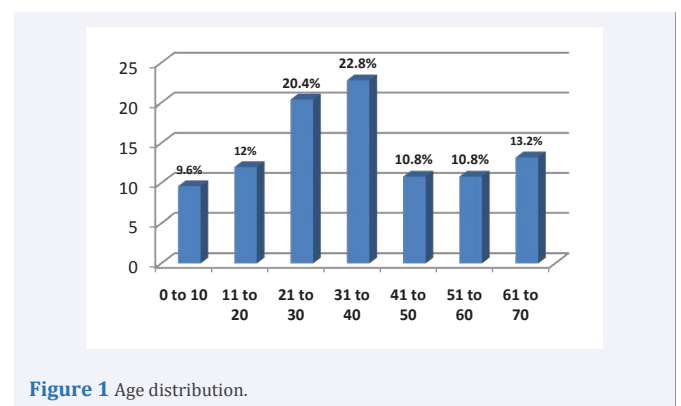
RESULTS

This study includes 83 patients diagnosed as lower motor neuron facial nerve palsy (LMN FNP) their age range between (3-70) years with high incidence (22.8%) in middle age group between (31-40) and the mean age of $35.7 \pm SD$ (Figure 1). Figure (2) showed two third of the patients were males 51 patients (61.4%), and one third were females 32 patients (38.6%). The main presenting symptoms were sudden onset in 56 patients (67.5%) and progressive onset in 26 patients (32.5%) (Figure 3).

Figure (4) showed two third of unilateral FNP were left side palsy (60.2%) and one third were right side palsy (39.8) in our study group.

Figure (5): represents the past medical history of the patients in whom similar condition were found in 8 patients (9.6%), history of previous surgery in 6 patients (7.2%) and history of trauma in 14 patients (16.9%).

There were many associated symptoms with LMN FNP, the most frequent symptoms were hearing loss in 39 patients (47.0%), followed by otalgia in 35 patients (42.2%), otorrhea in 27 patients (32.5%), tinnitus in 21 patients (25.3%), headache



in 17 patients (20.5%), vertigo in 14 patients (16.9%), skin vesicles in 7 patients (8.4%) and pre-auricular swelling in 3 patients (3.6%) (Figure 6).

All patients with LMN facial palsy presented with mouth deviation and loss of nasolabial fold (100%), on the other hand, vast majority found to have loss of forehead wrinkling, decrease of lacrimation and inability to close eyes 72 patients, 64 and 63 patients (86.7%, 77.1% and 75.1%) respectively. Parotid swelling was observed in few cases 5 patients (6%), followed by other findings with percentage of 2.4% (e.g. hyperacusis, loss of taste sensation) (Figure 7).

Table (1): Represent the Otoscopic finding in which it showed that 28 patients (33.7%) had perforated T.M, 3 patients (3.6%) had granulation tissue and 52 patients (62.7%) had normal tympanic membrane.

The most frequent cause of LMN FNP in this study is bell's palsy which represents one third of the study group (33.7%), followed by trauma and CSOM which represent one fourth and one fifth of the study group (24.1%) and (18.1%) respectively. Malignant otitis externa found in diabetic patients with frequency of 8 patients (9.6%). Seven patients of this study group had Ramsey hunt syndrome (8.4%). The Lowest incidence were found in parotid tumor, local anesthesia and Carotid body tumor (3.6%, 1.2%, 1.2%) respectively Figure (8).

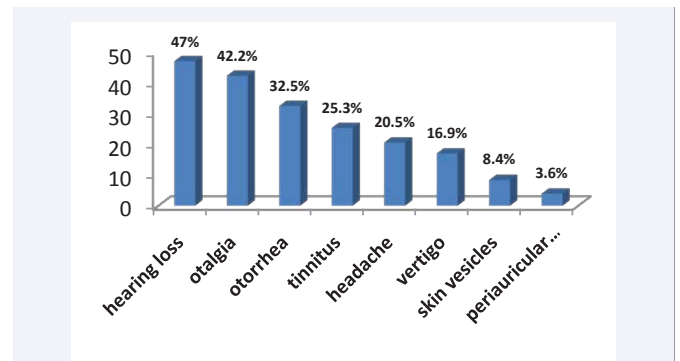


Figure 6 Associated symptoms to LMN FP.

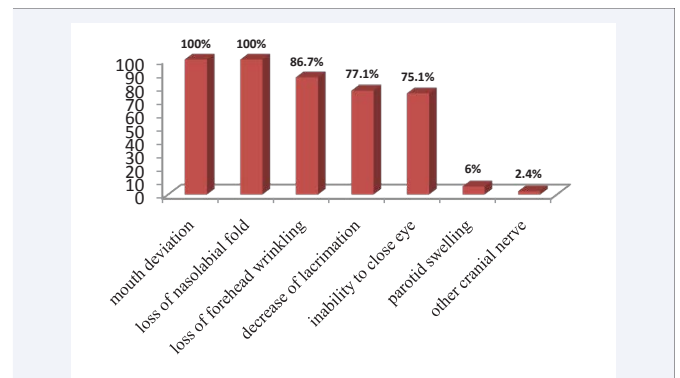


Figure 7 Clinical findings of patients.

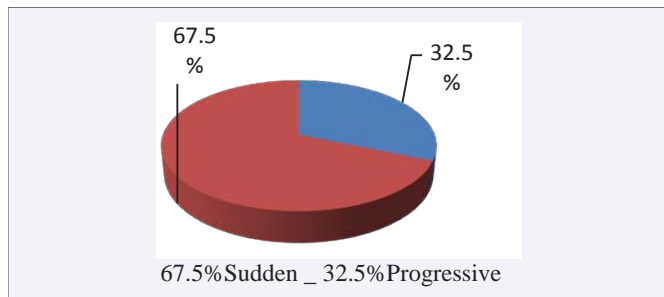


Figure 3 The onset of L.M.N. facial nerve palsy.

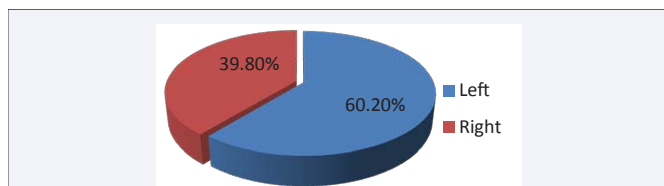


Figure 4 The Site of Unilateral L.M.N. Facial nerve palsy.

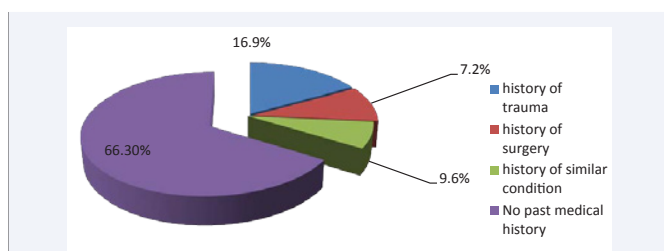


Figure 5 Past medical history of the patients.

Table 1: Otoscopic finding of the patients.

Otoscopic findings	frequency	percent
Perforated TM	28	33.7%
Granulation tissue	3	3.6%
Normal TM	52	62.7%

Regarding medical treatment, Two third of the study group received Steroids, one third received antiviral, one fourth received antibiotics in combination with steroids and antiviral. Patients used artificial tears were 73 (88.0%), and 36 patients (43.4%) referred to physiotherapy and rehabilitation centers.

Regarding surgical treatment of predisposing factors, 10 patients (12%) underwent surgery in form of mastoidectomy, parotidectomy and myringotomy (7.2%, 2.4%, 2.4%) respectively.

The outcome of treatment; 29 patient (34.9%) did not response to treatment and 54 patients (65.1%) responded to treatment in different grades, where 39(72.0%) were of good response and 15 patients (28%) were of poor response.

DISCUSSION

All patients with lower motor neuron facial palsy (LMN FNP) presented with mouth deviation and loss of nasolabial fold (100%), on the other hand, vast majority was found to have loss of forehead wrinkling, decrease of lacrimation and inability to close eyes (86.7%, 77.1% and 75.1%) respectively. Parotid swelling was observed in few cases (6%), followed by other

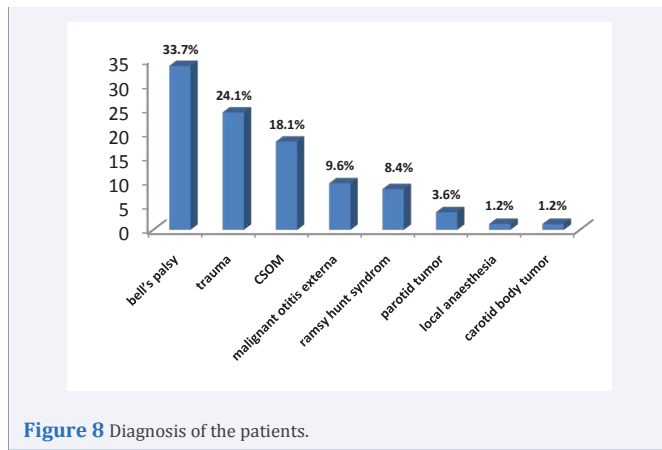


Figure 8 Diagnosis of the patients.

findings with percentage of 2.4% (e.g. hypercausis, loss of taste sensation), this is correlated to the study of Thompson AL et al, and others [11,23,15].

As cause of LMN FNP, Bell's palsy, trauma and chronic suppurative otitis media were the most frequent causes in study group (33.7%, 24.1% and 18.1% respectively) this is compatible with the studies of Gupta DK and Moore GF who revealed that, Bell's palsy being the commonest cause of lower motor neuron facial palsy [24,25].

Also, Naidoo SK reported similar findings showing that; trauma is the second most common cause of facial nerve paralysis [26].

Kim J and colleagues reported compatible findings showing that, CSOM causing facial paralysis frequently [27].

In the current study, all patients with malignant otitis externa were males, which is consistent with findings reported by Ahmed Rajput MS who reviewed that, all the patients in their study were males [20].

Regarding the treatment, eye care and steroids representing the most frequent medication used (88% and 72.3% respectively); Patients with Bell's Palsy mostly received combination of antiviral, steroids and eye care, this in agreement with Sullivan FM [21].

Positive response to medical treatment was reported in nearly two thirds of patients (65.1%); most of them had good response (within 3 weeks), while others had poor response (more than 3 weeks), response rate in the current study is compatible with 52% which was reported by Murthy JMK and others.

CONCLUSION

The most common cause of lower motor neuron facial palsy (LMN FNP) is Bell's palsy. History of trauma, previous surgery, rural residence, and middle age, diabetic were the most frequent risk factors reported. The commonest clinical presentations were sudden onset of FNP, mouth deviation, loss of nasolabial fold and forehead wrinkling. Medical treatment may include combination of steroid, antiviral and antibiotics.

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