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Etiopathological factors and management of facial palsy

Divya HR[1], Rajith[2], Govindegowda KM[3]

[1]Senior Resident, Department of ENT, Mysore Medical College and Research Institute, Mysore, Karnataka, India
[2]Assistant Professor, Jayadeva Hospital, Mysore Medical College and Research Institute, Mysore, Karnataka, India
[3]Professor and Head, Department of ENT, Mysore Medical College and Research Institute Mysore, Karnataka, India

ABSTRACT

Facial nerve paralysis occurs due to diverse etiology and affects persons of all age group. Most causes of paralysis lie within the temporal bone. Evaluation of these cases includes complete head and neck examination with special emphasis on otological workup. While many cases are managed conservatively a small but significant number will require surgical intervention.

Objectives: To study the various etiopathological factors responsible for facial nerve paralysis and its clinical course and to analyze the outcome of medical and surgical management policy adopted.

Methodology: Descriptive time bound study conducted at Department of ENT,Mysore Medical College and Research Institute, Mysore from 1st November 2009 to 30thApril 2011.Patients with LMN facial nerve palsy were included in the study. They were investigated and treated as per the cause and their facial nerve function after treatment was assessed.

Results: A total of 50 patients with facial nerve paralysis due to various causes were seen during the study period. The Bells palsy 21(42%) was the most common cause followed by Accidental trauma 13 (26%). LMN facial palsy was found more common in males than in females (1.5:1) and more in the adult age group(20-40 years). Bell's palsy was more in 20-40 years age group with male to female ratio of 0.75:1. About 76% patients with Bells palsy had complete recovery with steroids, while 77% of patients with trauma had complete recovery. All patients of CSOM with facial palsy had complete recovery.

Conclusion: Most cases of Bell's palsy can be managed conservatively. Cases due to iatrogenic trauma and accidental injury require careful evaluation and early intervention. CSOM cases fair well withmodified radical mastoidectomy and decompression of the nerve. The causes for facial paralysis are similar compared to other studies in many cases. Little dissimilarity are observed depending on the geographical landmarks, health consciousness and type of center where the study was done.

Keywords: Facial Paralysis, Chronic Suppurative otitis media,Bell's Palsy,Fracture,Temporal Bone, Corticosteroid.

Introduction

Facial Nerve Paralysis is a common clinical condition encountered by otorhinolaryngologist. Much of the nerve's susceptibility to paralysis can be attributed to its anatomical factors.

**Correspondence*
Dr. Divya HR
Senior Resident, Department of ENT, Mysore Medical College and Research Institute
Email: aniruddhkrishna@outlook.com

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].

Causes of Facial Nerve paralysis are numerous which can be congenital, trauma, neurological, infection, metabolic, neoplastic, toxic, autoimmune, iatrogenic and idiopathic. More than 40 different causes of facial paralysis are known, classified as idiopathic, traumatic, infections, neoplastic and metabolic. Of the various

causes, 75% are usually due to Bells palsy or secondary to traum[2]..Management of facial nerve dysfunction is individualized and may include observation, administration of pharmacological agents, surgical interventions, physical therapy and psychological counselling[3].Surgical Management of facial nerve disorders, continues to be as controversial as it was in the days of Cawthorne and Ketter[4].Hence the degree of recovery also varies as per the modality of treatment used. In this context, it seems essential to know the complete management of facial nerve paralysis in our practice to help patients with this disorder to fare well and improve our skill and knowledge in managing future cases. The present study is aimed at doing such an assessment.

Objectives of the study

To study the various etiopathological factors responsible for facial nerve paralysis and its clinical course.To analyze the outcome of medical and surgical management policy adopted.

Methodology

The present clinical study was undertaken to study the etiopathogenesis and management of LMN Facial paralysis at Krishnarajendra Hospital attached to Mysore Medical College and Research Institute, Mysore from 1st November 2009 to 30th April 2011.Among the patients attending ENT, Medicine, Surgery, Ophtholmology and Neurology department 50 cases having facial paralysis due to various causes were selected for the study. In each of these cases, a detailed clinical history was elicited and physical examination was carried out as per the proforma of the study. Investigations like routine blood, urine examination, x-ray studies were done in the hospital. In some relevant cases, further investigations like, CT-scan and other specific tests were done depending on individual basis. After investigation the patient were treated medically or surgically as indicated. After informing the patient and obtaining prior written consent, the patient was subjected to surgery as and when indicated, and conforming to well recognized and established modalities of treatment. Post treatment the assessment of deformity and degree of improvement were assessed. Whatever the modality of treatment, the patients were followed up for a minimum period of three months when the improvement was again assessed.

Inclusion criteria

50 patients presenting with LMN type of facial paralysis of both sexes and all age groups were included in this study.

Exclusion criteria

1. Patients presenting with LMN facial palsy associated with congenital syndromes.
2. LMN facial palsy associated with hypertension and diabetes mellitus.
3. Patients presenting with bilateral facial palsies were excluded from study.

Results and Discussion

Table 1: Etiological distribution of LMN Facial Palsy

Sl.no.	Causes of facial paralysis	No. of Cases	Percentage
1	BELL'S PALSY	21	42%
2	ACCIDENTAL TRAUMA	13	26%
3	POST OPERATIVE	06	12%
4	CSOM	04	8%
5	ASOM	03	6%
6	HERPES ZOSTER	03	6%
	TOTAL	**50**	**100%**

Among the 50 cases of facial palsy seen in our study the most common cause of facial palsy seen was Bells palsy with 21 cases (42%). The second most common cause was trauma (accidental & surgical) with 19 cases (38%). Other causes were paralysis secondary to CSOM 4 cases (8%), paralysis secondary to ASOM 3 cases (6%). Only three cases (6%) of facial palsy due to Herpes zoster were seen. In 1986 May published his result of study of 1912 cases of facial palsy. The following causes of facial palsy were seen in his study[5]

Table 2: Causes of facial palsy in May's study

Sl.no.	Cause	Mark May's study (%)		Present Study(%)	
1.	Bell's palsy	1082	55	21	42
2.	Trauma	375	19	19	38
3.	Herpes Zoster	145	7	3	6
4.	Tumors	126	6	-	-
5.	Infection	78	4	7	14
6.	Birth trauma	62	3	-	-
7.	Others	44	2	-	-
	Total	1912	100	50	100

In both the studies Bells palsy was seen to be the most common cause for facial palsy, 55% in Mays study and 42% in our study. The second most common cause was trauma in both the studies. This includes both surgical trauma and head injury. The third most common cause in our study ear infection (14%) followed by Herpes zoster (6%). In the study by May Herpes zoster was the third most common cause. Herpes zoster was less common in our study probably because cases of herpes zoster were seen by the skin specialist initially and managed by them. Tumors of the ear were not seen in our study.

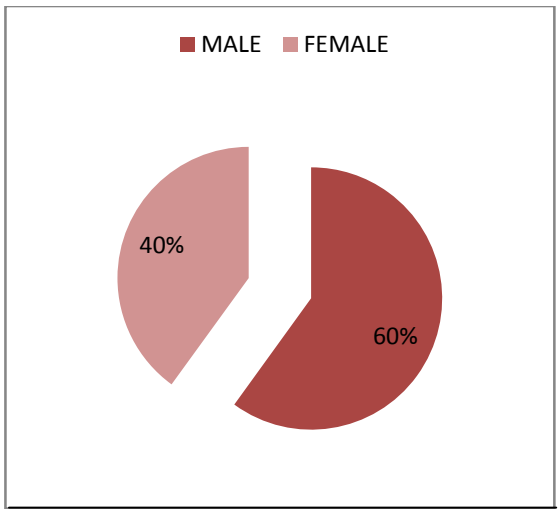

Fig.1: Sex distribution of LMN Facial Palsy

In the present study there were 30 male patients (63%) and 20 female patients (37%). The male female ratio was 1.5:1. This is because traumatic facial palsy was more common in male patients in our study.

Table 3: Age distribution of LMN Facial Palsy

Sr. no	Age group in years	No. of cases	Percentage
1	0-10	4	08
2	11-20	11	22
3	21-30	18	36
4	31-40	8	16
5	41-50	5	10
6	>/= 51	4	08
	TOTAL	50	100

The incidence of facial palsy was highest in age group of 21 and above, with 18 cases in 21-30 , and 8 cases in 31-40 age group.The reason why adults are more commonly affected is because Bells palsy, the most common cause, is most commonly seen in the adult age group and so are the traumatic cases. Only 4 cases were seen in the 0-10 age group.

Table 4: Clinical presentation in patients with LMN Facial Palsy

Sr. no	Signs and symptoms	No. of cases	Percentage
1	Deviation of angle of mouth	50	100
2	Inability to close the eyes	50	100
3	Ear ache	21	42
4	Decreased hearing	8	16
5	Ear discharge	4	8
6	Vesicles	3	6

In the present study all patients presented with history of deviation of angle of mouth and inability to close their eyes (100%). Ear ache (42%) was the other common symptom. Decreased hearing (16%) was complained of by traumatic cases and those secondary to ear infections. Ear discharge was seen in those four patients who presented with CSOM and facial palsy. Vesicle in the ear was seen in only 3patients with Herpes zoster.

Bell's palsy:

Fig 3: BELL'S Palsy

Facial nerve paralysis due to Bells palsy is the commonest cause in our study, 21 cases (42%).The majority of Bells palsy patients in the present study age group of 20-40 years (52.34%). The youngest was 10 years old and the oldest was 63. Both Shambaugh[3] and May (1962) in their studies also quote a peak incidence of Bells palsy between 21 and 40 years of age although they say Bells palsy can occur at any age. [6] In our study, all patients presented with paralysis of grade II to IV House Brackmann. All the patients with Bells palsy were treated with prednisolone (1 mg/kg/day 7 days initially) and methyl-cobalamine. Other supportive measures were used which includes physiotherapy and psychological support At the end of 2nd week 4 patients had complete recovery and 3 patients showed signs of recovery. At the end of 6 weeks 16 patients (76%) had complete recovery of facial function. Remaining 5 patients (23%) had partial recovery.Adour *et al* (1978) in his study showed that, there was complete recovery in 90% of patients and 10% had incomplete recovery[7]. Pieterson (1982) studied the natural history of Bells palsy in 1000 patients over a period of 15 years[8]. In his study 84% showed complete recovery and only 4% out of the remaining 16% had poor recovery.

Table 5: Comparison of recovery in different studies

Recovery	Present study(%)	Pieterson(1982) (%)	Adour *et.al.*(1978) (%)
Completerecovery	76	84	90
Incompleterecovery	23	16	10

Accidental trauma

Fig 2: Traumatic facial palsy

In our study 13 cases (26%) were due to accidental trauma; of these 12 were males and 1 female.

Table 6: Type of Injury

Type of Injury	No. of cases	Percentage
Longitudinal Fractureof Temporal Bone	9	69.23
Transverse FractureofTemporal Bone	3	23.07
Extra-temporal Injury	1	7.69

Presentation of facial paralysis
Immediate - 8 cases
Delayed - 5 cases

Associated ear bleeding was seen in all cases of longitudinal fracture.CSFotorrhoea was seen in one case. Sensorineural hearing loss of severe degree was seen in 2 cases of transverse fracture and 2 cases of longitudinal fracture.

All cases of temporal bone fracture were managed conservatively. One case of transverse fracture with grade IV paralysis and one case of extra-temporal injury of facial nerve were offered surgery but patients refused.

Table 7: Extent of Recovery

Type of injury	No. of cases	Type of management	Complete recovery	Partial recovery	No recovery
Longitudinal fracture	09	Conservative	08	01	-
Transverse fracture	03	Conservative	02	-	01
Extra-temporal injury	01	-	-	-	01

Eight cases of longitudinal fracture and two cases of transverse fracture recovered completely. One case of longitudinal fracture which showed improvement (grade III) lost follow up.

Surgical trauma

In the present study 6 out of 50 cases (12%) were due to surgically induced paralysis. Out of the 6, five had undergone radical mastoidectomy and one had undergone cortical mastoidectomy. Three patients had immediate onset and three had delayed onset of facial paralysis.Douglas JG, Clough S and Derald EB in their study of 22 patients of iatrogenic facial palsy found that the most common surgery leading to facial nerve injury was mastoidectomy accounting for 55% in their study. The second most common surgery was removal of exostosis[9].Exostosis is not commonly seen in our clinical practice and hence the surgery is less commonly done.The patient who underwent cortical mastoidectomy developed facial paralysis intra-operative but recovered within 4-5 hours after surgery. The paralysis in this case is believed to be due to the local anaesthesia. The other 5 cases were treated with steroids and 2 had complete recovery another 3 had partial recovery over a period of 3 weeks.

Facial paralysis due to CSOM

Fig4: CSOM with facial palsy

In the present study there were 4 cases (8%) of facial palsy due to CSOM. All the 4 cases had a cholesteatoma. Three cases affected the right ear while one case the left ear was affected. All cases were treated with modified radical mastoidectomy and decompression of the nerve was done. All patients had complete recovery of the

nerve function after surgery. In a study by Aluntas[10]., involving 1188 patients with CSOM, 20 patients had facial paralysis. Of these 20 cases, 14(70%) had Cholesteatoma.In a study by savic and djemic[11], involving 64 patients of facial paralysis due to CSOM, all underwent modified radical mastoidectomy with facial nerve exploration. 70% patients had complete recovery of facial function.

Fig 5: CSOM with facial palsy following recovery after surgery

Facial paralysis due to ASOM

In the present study there were 3 cases (6%) of facial palsy due to ASOM. All of them were managed conservatively with antibiotics. All patients had complete recovery of the nerve function.

Herpes zoster

In the present study 3 patients out of 50 (6%) had features of herpes zoster with facial palsy. In two left side of the face was affected and one patient right side of the face was involved all three patients had vesicles around the ear and the angle of the jaw. The external auditory canal also had vesicles. They also complained of severe pain over the affected areas.These patients were treated medically with acyclovir, analgesic, steroids, methyl cobalamine and physiotherapy. One patient had complete recovery with treatment by 8 weeks remaining two had partial recovery.In a study by Mark may[12]., incidence of herpes zoster was 7%, similar to present study.

Summary

1. This study consisted of 50 cases of LMN facial palsy due to various causes.
2. About 80% of patients belonged to <40 years age group. Male to female ratio was 1.5:1.
3. Bells palsy was the most common cause of LMN facial palsy constituting 42% of the cases.
4. 52.34% of the patients of Bells palsy presented between the age group of 20-40.
5. Treatment with medical line consisting of steroids and physiotherapy gives complete recovery in 76.19% patients.
6. Surgical decompression of the nerve was not done for any patient in the present study as it is still controversial.
7. Trauma constituted the second most common cause of LMN Facial palsy at 38%.
8. Head injury (68%) is the most common cause of trauma. Road trafficaccidents were the cause in all the cases.
9. Majority of the head injury patients had a good recovery (76.9%).
10. Facial paralysis due to mastoid surgery is rare in experienced hands. Of the patients who developed surgically induced palsy, 50% recovered completely and 50% partially.
11. Facial paralysis due to CSOM has become less common due to the use of antibiotics and early surgical procedure.
12. All CSOM with facial palsy cases need to be treated by surgery, especially if associated with cholesteatoma and all the cases showed good recovery following surgery.
13. Facial paralysis due to ASOM was seen in three cases which recovered completely with medical management.
14. Only three case of facial palsy due to herpes zoster was seen. Only one case recovered completely with medical treatment.

Conclusion

Facial is the seventh cranial nerve and is the nerve of facial expression. Due to the long and complicated course of the nerve through the temporal bone it is prone to damage from various causes.Among the various causes idiopathic facial nerve palsy or Bells palsy is the most common cause. Bell's palsy is more common in adult males and so is traumatic facial palsy. The majority

of cases of Bells palsy and trauma recover with conservative treatment including steroids and physiotherapy. Surgery in some conditions like idiopathic facial palsy is still controversial. Other conditions like facial palsy secondary to CSOM especially when associated with cholesteatoma must be treated by surgery, but the prognosis may not always be satisfactory especially if the nerve is infiltrated. Tumours and herpes zoster causing facial palsy is rare.

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. Barry S, Mark M. Disorders of Facial nerve. Scott-Brown's Otolaryngology'6th ed, Kerr AG, Bueth JB. Butterworth-Heinmann, London, 1997: vol 3;1-38.
3. Samy RN, Gantz BJ. Surgery of the Facial nerve.in Glasscock-Shambaugh, Surgery of the Ear, 5th ed, Glasscock ME, Gulya AJ, eds. BC Decker, Canada, 2003:615-639
4. Bruce JG, Jay TR. Intratemporal Facial nerve surgery. Otolaryngology and Head and Neck Surgery, 3rd ed, Cummings CW, Friederickson JM, Marker LA, Krauss C, Richardson MA, Schuller D. Mosby USA, 1998;4: 2785 – 2799.
5. Mark M, Barry M S, Michael P, Jurg U, Erik P, Susan R.K., Idiopathic Palsy, Herpes Zoster Cephalicus and other facial nerve disorders of viral origin. The Facial Nerve Second Edition, Thieme, New York 2000: 319 – 338.
6. John C, Mark. Perspectives in facial reanimation. The Facial Nerve,2nd ed, Mark M, Barry S. Thieme, New York,2000:551-570.
7. Adour KK, Byl FM, Hilsinger RL. The true nature of Bells palsy: Analysis of 1000 consecutive cases. *Laryngoscope* 1978;88:787-811.
8. Pieterson E. The natural history of Bells palsy. *American Journal of Otology* 1982;4:107-111.
9. Douglas GJ, Clough S, Derald EB. Iatrogenic Facial nerve injury during otological surgery. *Laryngoscope* 1994;104.
10. Altunlas A,Nal A,Aslan A,Ozcan M,Kurkcuoglu S,Nalca Y:facial nerve paralysis in CSOM:Ankara Numune Hospital Experience. *AurisNasus Larynx* 1998;25:169-72.
11. SavicDL,Drijc DR:Facial paralysis in CSOM. *Clinical Otolaryngology* 1989;14:515-17.
12. May M, Klein SR: Differential Diagnosis of Facial Nerve Palsy. *Otolaryngol Clin North Am*:1991:24:614-617.

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