

## Ocular manifestations in cases of Facial nerve palsy in tertiary care centre

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### Abstract

**Objectives:** To describe the ocular manifestations and complications in cases of facial nerve palsy in different age group, presenting in a tertiary care centre.

**Place and Duration of Study:** This study was conducted at Maharani Laxmi Bai Medical College, Jhansi, Uttar Pradesh, India from January 2020 to December 2020.

**Materials and Methods:** It is a retrospective analysis of data collected of all the patients with facial nerve palsy attending the ophthalmology department of Maharani Laxmi Bai Medical College Jhansi U.P. from January 2020 to December 2020. Their demographic data along with time interval between onset of symptoms and presentations, visual acuity, signs, complications are all recorded on the first visit in outpatient department and subsequent follow up until complete recovery.

**Conclusion:** Bell's Palsy is commonly seen in young adults aged 20-40 years old. The incidence is more in females. Almost half of them presented early in the disease within few days with lagophthalmos, watering, foreign body sensation, conjunctival congestion corneal infiltrate. Complete recovery occurs within six months though the recovery rate is faster in younger individuals. Vision threatening complications are rare.

**Keywords:** Bell's Palsy, Facial Palsy, Lagophthalmos.

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### I. Introduction

Facial nerve dysfunction can severely affect a patient's quality of life. The human face is a focal point for communication and expression. The facial nerve carries motor, sensory, and parasympathetic fibers, so facial palsy results in both a functional and cosmetic impairment.

Facial nerve palsy is diagnosed upon clinical presentation with weakness of the facial muscles. There may be immobility of the brow, incomplete lid closure, drooping of the corner of the mouth, impaired closure of the lips, dry eye, hyperacusis, impaired taste, or pain around the ear.

Facial nerve palsy is a neurological condition in which function of the facial nerve (cranial nerve VII) is partially or completely lost. There are many causes of unilateral facial palsy that should be considered, including idiopathic, traumatic, infective, neoplastic, congenital, and autoimmune. Two major types are distinguished: central facial palsy (lesion occurs between cortex and nuclei in the brainstem) and peripheral facial palsy (lesion occurs between nuclei in the brainstem and peripheral organs). Central facial palsy manifests with impairment of the lower contralateral musculature. In contrast, peripheral facial palsy leads to impairment of the ipsilateral muscles and also affects the eyelids and forehead. It is often idiopathic which is also known as Bell's palsy.

Bell's Palsy, named after Scottish anatomist Sir Charles Bell, is the most common cause of acute onset unilateral and isolated facial nerve weakness/paralysis leading to inability to voluntarily move facial muscles on the affected side of the face. Although typically self-limited, the facial paresis/paralysis that occurs in Bell's Palsy may cause significant temporary oral incompetence and an inability to close the eyelid, leading to potential eye injury. However, about 80% of cases show spontaneous recovery even without treatment.<sup>(1,2)</sup> It affects all age groups, with the highest incidence in the second and third decade, without sex preference.

The temporal and zygomatic branches of facial nerve supply the forehead and eyelid muscles. Their involvement in the disease leads to paralysis of orbicularis oculi muscle resulting in absence of forehead wrinkles on the affected side, brow ptosis, lagophthalmos, decreased tear production and ectropion giving rise to a characteristic facial asymmetry. These factors along with poor Bell's phenomenon and corneal anesthesia can lead to dry eye, infection, corneal ulceration, perforation, and even blindness. Therefore, these ocular complications can be devastating both cosmetically and functionally. The initial treatment is supportive like

frequent use of lubricating eye drops, taping of lids at night, use of eye shields and physiotherapy of facial muscle. Surgery is reserved for those patients who have failed nonsurgical treatment to protect the cornea and for those who have been treated effectively with conservative measures but are faced with the prospect of long-term or permanent paralysis.<sup>3</sup>

Systemic administration of a seven-day course of Tab. Acyclovir 800 mg 5 times a day and a tapering course of prednisone, initiated within three days of the onset of symptoms, is also recommended to reduce the time to full recovery and increase the likelihood of complete recuperation.<sup>4</sup> The percentage of complete recovery between age 4 and 50 years varied from 83% to 74%, respectively, it tends to decrease to less than 54% at age 80.<sup>5</sup>

## II. Materials and Methods

It is a retrospective study of all the patients who visited the ophthalmology OPD of Maharani Laxmi Bai Medical College Jhansi U.P. with ocular problems of Bell's Palsy and also the diagnosed cases of Bell's Palsy referred to us by ENT, Medicine and pediatrics departments of the same hospital. We collected data of 57 patients with Bell's Palsy from January 2020 to December 2020 AD. Demography and chief complaints of these patients were noted. Visual acuity, anterior segment and posterior segment examination by slit lamp bio microscopy were collected. Different treatment modalities like medical, physiotherapy and surgical treatment received by each patient was noted. Similar data were collected of the patients when they came for subsequent follow-ups. The data was tabulated in excel and statistical analysis done to find out the demography of the disease, its ocular features and complications.

## III. Results

There were total 57 patients with Bell's Palsy attending our OPD. Among them 25 patients (43.85%) aged between 21-40 years old, followed by 13 (22.80%) aged between 41-60 years old. The rest of the age group affected are given in Table 1.

**Table 1: Age distribution**

Age group	No. of patients	Percentage %
0-20	05	8.77 %
21-40	25	43.85 %
41-60	13	22.80 %
61-80	08	14.03 %
>80	06	10.52 %

Among them 58.60% were females. Among them (45.32%) presented to us within first four days of the onset of symptoms whereas (13.28%) presented after one month of onset of symptoms because they had mild initial symptoms but lagophthalmos was persisting even after a month. Right and left eyes were equally involved among our cases. The most common complain of patients being unable to close the eyes in 45 patients (78.94%) followed by watering in 40 patients (70.17%). The rest of the symptoms are given in Table 2.

**Table 2: Symptoms at presentation**

Symptoms	No. of patients (%)	Percentage %
Unable to close eye	45	78.94%
Watering	40	70.17%
Foreign body sensation	32	56.14%
Burning sensation	27	47.36%
Blurring of vision	25	43.85%
Pain	10	17.54%
Photophobia	09	15.78%
Redness	05	8.77%

Twenty-five (43.85%) patients also complained of blurring of vision. However, 27 patients (47.36%) had best corrected vision of 6/6 in the affected eye and 23 patients (40.35%) had BCVA of 6/9 in the affected eye. Only seven patients (12.28%) had visual acuity 6/18 and less. On examination, lagophthalmos was the most commonly sign seen in 55 patients (96.49%) followed by conjunctival congestion in 23 (40.35%) and corneal infiltrate in 16 (28.07%) patients. Other signs are listed in Table 3.

**Table 3: Signs at presentation**

Signs	No. of patients	Percentage %
Lagophthalmos	55	96.49%
Conjunctival congestion	23	40.35%
Corneal infiltrate	16	28.07%
Reduced blinking	14	24.56%
Reduced corneal sensitivity	12	21.05%
Poor Bell's Phenomenon	06	10.52%
Corneal ulcer	04	7.01%

Out of 57 patients, only one patient needed tarsorrhaphy for severe lagophthalmos and corneal ulcer. Rest of the patients were managed with topical lubricating eye drops, ointment, topical antibiotics for ulcer, taping of lids at night, a short course of oral steroids and a physical therapy. Among them, 22 patients (38.59%) had complete resolution within one month with two of them getting resolved in 10 days. It was followed by 18 of them (31.57%) getting completely resolved in 60 days. Younger patients recovered faster than older people. Only 3 patients (4.3%) took 160 days for completely getting rid of signs and symptoms of Bell's Palsy. Male patients recovered faster than female patients.

#### IV. Discussion

Bell's palsy is the most common form of facial weakness, accounting for almost three-quarters of all cases of acute facial weakness. The diagnosis is established without difficulty after excluding other causes of unilateral isolated facial weakness.<sup>(6)</sup> In our study, the commonest age group affected was between 21-40 years (43.85%), followed by 41-60 years in 22.80%. Other studies also showed similar results with peak incidence in 16 to 45 years.<sup>(7-10)</sup> Whereas Peitersen E reported two age group peaks of disease manifestation (20-40 years old and next 70-80 years old).<sup>(4)</sup> Rowhani-ahbar A et al in 2012 found noticeably higher incidence of Bell's Palsy among children  $\geq 10$  years of age and gave reason for such a trend to be increased cumulative exposure to microbial agents with time.<sup>(11)</sup> Regardless of age, the incidence rate was consistently higher among females than males in their study which is similar to ours where females constitute 58.60% of our patients. Konstantinos M also reported that 63.6% of their patients were women.<sup>(7)</sup>

Literature surveys shows on follow up about 70-85% of patients function returned within three weeks and in the remaining 15% after 3-5 months.<sup>(3,4,7,12,13)</sup> We got similar results too where 72.35% had complete resolution within 3 months, among them, 38.59% had resolved in one month.

While another study by Lee HY et al (2013) shows that the percentage of complete recovery between age 4 and 50 years varied from 83% to 74%, respectively, and it decreased to less than 54% at age 80 which proves that the age of the patient is an important risk factor for facial nerve recovery.<sup>(12)</sup> While among 8 of our patients belonging to age group 61-80 years recovered in 3-5 months only thus proving that age is also a prognostic factor in recovery rate. This fact is also proven by Chang Il Cha et al whose study showed in the adults aged 16 - 30, 31 - 45, 46 - 60, 61 - 75, and 76 years and older, the recovery rates were 95.5% (64 of 67), 91.0% (71 of 78), 91.1% (82 of 90), 89.0% (49 of 55), and 81.8% (9 of 11), respectively.<sup>(9)</sup>

Konstantinos M et al, after survey of various literatures as well as their own observations believe that no improvement can be expected after 1 year, making a follow-up of 12 months necessary.<sup>(7)</sup> In our study too all the patients recovered fully within 5 months. Though Bells' Palsy is a self-limiting disease with only few patients having vision threatening condition like corneal ulcer (7.01% of our cases).

Though 25 patients also complained of blurring of vision with 10 of them also complaining of pain, corneal ulcer was present in 4 cases only. Blurring in other cases was due to reduced blinking and dry corneas. Therefore, early determination of the prognosis is important for the patient.

#### V. Conclusion

Bell's Palsy is commonly seen in young adults aged 20-40 years old. The incidence is more in females. Almost half of them presented early in the disease within few days with lagophthalmos, watering, foreign body sensation, conjunctival congestion corneal infiltrate. Complete recovery occurs with medical management alone though recovery rate is earlier in younger than in older patients. Thus, signifying that age is an important prognostic factor for faster and complete recovery. Vision threatening complications are rare in Bell's Palsy.

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