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Original Research Article

A CLINICAL STUDY OF LMN FACIAL NERVE PALSY IN THE PAEDIATRIC AGE GROUP AT A TERTIARY CARE HOSPITAL

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Abstract

AIM

1. To study the clinical presentation of facial nerve palsy (FNP) in paediatric age group.
2. To determine the outcome of FNP in children treated with steroids and antivirals.

METHODOLOGY

Tertiary Hospital based study carried out in patients attending outpatient Department-ENT, GIMS-Gadag, between June 2022 and September 2023. 50 children under the age 16 years with acute unilateral FNP were selected. House-Brackmann grading scale is used. Patients treated with steroids, antivirals then outcomes are noted.

RESULTS

- Out of 50 patients→40 idiopathic (80%) and 10 infection induced FNP (7 otitis media, 3 varicella-zoster virus infection) (20%).
- Improvement is noted in the outcomes of idiopathic and infection induced FNP after treatment with steroids and antivirals.
- There is no difference in the gender, age-group, family history, grading between idiopathic and infection induced FNP.
- There is no significant difference noted in the recovery outcome between who were treated with and without steroids.

CONCLUSION:

- Idiopathic and infection induced facial nerve palsy in children have better prognosis following treatment with steroids and antivirals.
- There is no difference in the gender, age-group, family history, HBS grading between the idiopathic and infection induced FNP.

KEYWORDS: FNP-Facial nerve palsy; infection; House-Brackmann grading

Introduction

Acute peripheral unilateral facial nerve palsy, most commonly caused by Bell's palsy (idiopathic facial palsy).The other causes include congenital facial palsy, infections (otitis media ear diseases), trauma, syndromes such as Moebius and Melkersson-Rosenthal, hypertension, tumour, chronic systemic disease, and metabolic disorders. [1].

In clinical practice, facial nerve palsy is surprisingly common in children, affecting the communication skills and social interactions. Peripheral facial nerve palsy presents with weakness of the facial muscles, loss of facial expression, taste, and cornea sensations, which may also lead to vision problems.

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In the literature on adults, steroid treatment in the early period of the disease has been reported to shorten the recovery time, reducing the number of cases with incomplete recovery of facial nerve palsy [2–7]. In addition to the challenges in understanding the underlying cause of Bell's palsy, current guidelines are still uncertain on the selection of steroids and/or acyclovir treatment.

In a recent Cochrane review, antiviral treatment did not show any benefit of acyclovir or valacyclovir when given alone or even in combination of prednisolone [2, 3].
Pediatric population-based study showed no significant benefit between a steroid-treated group and an untreated group [8]

Here we aim to study the clinical presentation of facial nerve palsy (FNP) and to determine the outcome of FNP in children treated with steroids and antivirals.

TABLE 112.2 House–Brackmann staging system

Degree of injury	Grade	Definition
Normal (1°)	I	Normal symmetrical function in all areas
Mild dysfunction (barely noticeable) (1–2°)	II	Slight weakness noticeable only on close inspection
		Complete eye closure with minimum effort
		Slight asymmetry of smile with maximal effort
		Synkinesis barely noticeable, contracture or spasm absent
Moderate dysfunction (obvious difference) (2–3°)	III	Obvious weakness, but not disfiguring
		May not be able to lift eyebrow
		Complete eye closure and strong but asymmetric mouth movement with maximal effort
		Obvious, but not disfiguring synkinesis, mass movement or spasm
Moderately severe dysfunction) (3°)	IV	Obvious disfiguring weakness
		Inability to lift eyebrow
		Incomplete eye closure and asymmetry of the mouth with maximal effort
		Severe synkinesis, mass movement, spasm
Severe dysfunction (3–4°)	V	Motion barely perceptible
		Incomplete eye closure, slight movement of the corner of the mouth
		Synkinesis, contracture and spasm usually absent
Total paralysis	VI	No movement, loss of tone, no synkinesis, contracture or spasm

This system was proposed by House and Brackmann and adopted by the Facial Nerve Disorders Committee of the American Academy of Otolaryngology, Head and Neck Surgery.

METHODS

It's a tertiary Hospital based study carried out in the children attending outpatient Department of ENT, GIMS Gadag, between June 2022 and September 2023. 50 children under the age group of 16 years with acute unilateral facial nerve palsy were selected. House-Brackmann grading scale is used. Children were treated with steroids, antivirals then outcomes are noted.

Inclusion criteria:

- Children less than or equal to 16 years
- Idiopathic and infection induced (otitis media, varicella-zoster virus infection) acute isolated lower motor neuron FNP
- Unilateral facial nerve palsy.

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Exclusive criteria:

- Upper motor neuron palsy
- Central nervous system disorders
- Traumatic facial nerve palsy

The diagnosis of Bell's palsy and infection induced facial nerve palsy was made and other causes of peripheral facial palsy such as central nervous system disorders, trauma syndrome were excluded by history, physical examination, and diagnostic investigations. Children with Bell's palsy were treated with prednisolone orally for 7–10 days (1–2 mg/kg/day, max dose 60 mg/day) and tapered off within the next 3–5 days. Treatment was started in the first week of appearance of symptoms. For viral infection antiviral medication and for otitis media antibiotics was given.

Artificial teardrops and facial exercises were suggested by the ophthalmologist and physiotherapist were given. All patients were re-examined on day 7 and 15 for any evolving problem with respect to clinical outcome.

Statistical analysis

Statistical analysis is performed using SPSS version 15.0 (SPSS Inc., Chicago, IL). Data is presented as means + standard deviation of the mean and as medians with ranges. Descriptive statistics regarding age, gender, grade, treatment, and prognosis are calculated. The chi-squared availability test is used. Numerical data were compared with the Student t test. Significant relationships between the two conditions were also analysed via Spearman's correlation analysis. The level of significance was taken as 0.05.

RESULTS

- Out of 50 patients→40 idiopathic (80%) and 10 infection induced FNP (20%).
- Improvement is noted in the outcomes of idiopathic and infection induced FNP after treatment with steroids and antivirals.
- There is no difference in the gender, age-group, family history, grading between idiopathic and infection induced FNP.
- There is no significant difference noted in the recovery outcome between who were treated with and without steroids.
- Total 50 patients were analysed. There were 30 girls (60%) and 20 boys (40%).
- Clinical presentation of facial nerve palsy:

SR NO.	CLINICAL STUDY		Idiopathic FNP (%)	Infection induced FNP (%)	Total (%)
	No. of Patients		n =40(80%)	n =10(20%)	n =50(100%)
1	Age group (Years)	1-4	10(20%)	3(6%)	13(26%)
		5-8	10(20%)	5(10%)	15(30%)
		9-12	8(16%)	1(2%)	9(18%)
		13-16	12(24%)	1(2%)	13(26%)
Total			40(80%)	10(20%)	50(100%)
2	Gender	Male	15(30%)	5(10%)	20(40%)
		Female	25(50%)	5(10%)	30(60%)
Total			40(80%)	10%)	50(100%)
3	Season	Spring	8(16%)	1(2%)	11(18%)
		Summer	9(18%)	3(6%)	10(24%)
		Autumn	11(22%)	2(4%)	13(26%)

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		Winter	12(24%)	4(8%)	16(32%)
Total			40(80%)	10(20%)	50(100%)
4	Side affected	Right	18(36%)	4(8%)	22(44%)
		Left	22(44%)	6(12%)	28(56%)
Total			40(80%)	10(20%)	50(100%)
5	Family history		Nothing contributory	Nothing contributory	-
6	House-Brackmann grading scale(HBS)	I	-	-	-
		II	2(4%)	1(2%)	3(6%)
		III	23(46%)	3(6%)	26(52%)
		IV	12(24%)	5(10%)	17(34%)
		V	3(6%)	1(2%)	4(8%)
		VI	-	-	-
Total			40(80%)	10(20%)	50(100%)
7	Recovery time	4 weeks	18(36%)	7(14%)	25(50%)
		8 weeks	8(16%)	1(2%)	9(18%)
		12 weeks	13(26%)	1(2%)	14(28%)
		24 weeks	1(2%)	1(2%)	2(4%)
Total			40(80%)	10(20%)	50(100%)

Number of cases:

Age in years	Idiopathic FNP (%) n=40	Infection induced FNP (%) n=10		Total (%)
		Otitis media	Varicella-zoster virus infection	
1-4	10(20%)	2(4%)	1(2%)	13(26%)
5-8	10(20%)	3(6%)	2(4%)	15(30%)
9-12	8(16%)	1(2%)	-	9(18%)
13-16	12(24%)	1(2%)	-	13(26%)
Total	40(80%)	7(14%)	3(6%)	50(100%)
		10(20%)		

- Total number of patients examined were 50. There were 25(50%) female and 15(30%) male.
- About the aetiology of 50 children, 40(80%) were diagnosed with idiopathic (Bell's palsy) peripheral facial palsy and 10(20%) were infection induced facial nerve palsy in that 7(14%) were because of otitis media and 3(6%) were because of Varicella-zoster virus infection.
- There is no significant difference between Bell's palsy and infection induced facial nerve palsy in the demographic characteristics, recovery time.
- In the Idiopathic FNP 29 patients were treated with steroids, 10 patients were followed without steroid treatment, and only 1 patient was treated with steroid and acyclovir. No significant difference in recovery outcome was detected between the patients who were treated with and without steroid treatment.
- Out of 50 patients, 25(50%) showed complete recovery in 4 weeks, 9(18%) in 8 weeks, 14(28%) in 12 weeks, 2(4%) in 24 weeks.
- We did not find a significant difference in the recovery time between the Bell's palsy and Infection induced FNP.

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DISCUSSION

In children the incidence of peripheral facial nerve palsy varies from 5 to 21 in 100,000 annually [14, 19]. Diagnosis and determining the cause is very important; so that treatment can be started as early as possible. Most cases (26– 80.6%) are diagnosed with idiopathic facial palsy (Bell's palsy). However, various infections, trauma, hypertension, and chronic systemic diseases may also cause peripheral facial palsy [5–7]. May et al. reviewed 170 cases of pediatric peripheral facial nerve paralysis and Bell's palsy presented in 42%of the patients [9]. The other causative factors were trauma (15%), otitis media (12%), congenital (7.6%), birth trauma (5%), and neoplasia (4%). In another study, Evans et al. found that the most common cause was infections (36%) [5]. Yılmaz et al., who described facial palsy in Turkish pediatric patients, found that the Bell's palsy ratio was 80.2% [6]. In accordance with previous reports, we showed that Bell's palsy was the most common cause (80%), followed by infection (20%).

Here we have seen that otitis media was the most frequent infectious cause of peripheral facial nerve palsy seven patients (14%) as in previous reports [10]. Three patients (6%) had VZV infection.

VZV infection and reactivation are defined as an important cause of childhood peripheral facial palsy [11]

Bell's palsy can be related to age, family history, gender, and season. Pavlou et al. reported an incidence of 2.7/100,000 in patients older than 10 years, and an incidence of approximately 10.1/100,000 in patients between 10 and 20 years of age [12].But in our study we did not find significant family history.

Our study supports the other studies as that incidence increases with age [12]. Wang et al. showed that infectious cases are most common in the younger age group, and they determined two age groups for Bell's palsy: toddlers (0–2 years) and adolescents (15–16 years) [13]. Ozkale et al. found that Bell's palsy occurred most commonly in patients aged 2–6 and 10–14 years [10]. In our study, there was no statistically significant difference with sex, seasonal pattern, or side among the patients with infection as the cause of facial palsy.

In our study recovery rates were 100% overall and, which are similar to previous studies in which recovery rates varied from 85 to 97% [14, 15,16]. The mean recovery time was 2.85 months in Chen et al.'s study [15]. In our study, the mean recovery time was 1.5months overall. Some studies show that the early use of steroids shortens the recovery time [2–4]; however, some studies report the ineffectiveness of the early use of steroids [17]. A systematic review did not recommend the routine use of steroids in children with Bell's palsy; similarly, some studies did not recommend the use of acyclovir or valacyclovir [2, 8,18]. In our study, there were no statistically significant difference between steroid-treated and non-treated groups.

CONCLUSION

- Improvement is noted in the idiopathic and infection induced FNP after treatment with steroids and antivirals.
- There is no difference in the gender, age-group, family history, HBS grading between the idiopathic and infection induced FNP.

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- There is no significant difference noted in the recovery outcome between who were treated with and without steroids.
- Idiopathic and infection induced FNP in children have better prognosis following treatment with steroids and antivirals.

REFERENCES

1. Rowhani-Rahbar A, Baxter R, Rasgon B, Ray P, Black S, Klein JO, Klein NP (2012) Epidemiologic and clinical features of Bell's palsy among children in Northern California. Neuroepidemiology 38(4):252–258. https://doi.org/10.1159/000338303
2. Sullivan FM, Swan IR, Donnan PT, Morrison JM, Smith BH, McKinstry B et al (2007) Early treatment with prednisolone or acyclovir in Bell's palsy. N Engl J Med 357(16):1598–1607.https://doi.org/10.1056/NEJMoa072006
3. Engstrom M, Berg T, Stjernquist-Desatnik A, Axelsson S, Pitkaranta A, Hultcrantz M et al (2008) Prednisolone and valaciclovir in Bell's palsy: a randomised, double-blind, placebocontrolled, multicentre trial. Lancet Neurol 7(11):993–1000.
4. https://doi.org/10.1016/S1474-4422(08)70221-7
5. Salinas RA, Alvarez G, Daly F, Ferreira J (2010) Corticosteroids for Bell's palsy (idiopathic facial paralysis). Cochrane Database Syst Rev 3:CD001942
6. EvansAK, Licameli G, Brietzke S,WhittemoreK, KennaM(2005) Pediatric facial nerve paralysis: patients, management and outcomes. Int J Pediatr Otorhinolaryngol 69(11):1521–1528. https://doi.org/10.1016/j.ijporl.2005.04.025
7. Yilmaz U, Cubukcu D, Yilmaz TS, Akinci G, Ozcan M, Guzel O (2014) Peripheral facial palsy in children. J Child Neurol 29(11):1473–1478. https://doi.org/10.1177/0883073813503990
8. Drack FD,WeissertM(2013) Outcome of peripheral facial palsy in children—a catamnestic study. Eur J Paediatr Neurol 17(2):185–191. https://doi.org/10.1016/j.ejpn.2012.09.003
9. Ismail AQ, Alake O, Kallappa C (2014) Do oral steroids aid recovery in children with Bell's palsy? J Child Neurol 29(10):NP96–NP97. https://doi.org/10.1177/0883073813504624
10. May M, Fria TJ, Blumenthal F, Curtin H (1981) Facial paralysis in children: differential diagnosis. Otolaryngol Head Neck Surg 89(5):841–848. https://doi.org/10.1177/019459988108900528
11. Ozkale Y, Erol I, Saygi S, Yilmaz I (2015) Overview of pediatricperipheral facial nerve paralysis: analysis of 40 patients. J Child Neurol 30(2) : 193–199 . h t t p s : / /doi . o r g / 10. 1177/0883073814530497
12. Abdel-Aziz M, Azab NA, Khalifa B, Rashed M, Naguib N (2015) The association of varicella zoster virus reactivation with Bell's palsy in children. Int J Pediatr Otorhinolaryngol 79(3):328–331.https://doi.org/10.1016/j.ijporl.2014.12.010
13. Pavlou E, Gkampeta A, Arampatzi M (2011) Facial nerve palsy in childhood. Brain and Development 33(8):644–650. https://doi.org/10.1016/j.braindev.2010.11.001
14. Wang CH, Chang YC, Shih HM, Chen CY, Chen JC (2010) Facial palsy in children: emergency department management and outcome. Pediatr Emerg Care 26(2):121–125. https://doi.org/10.1097/PEC.0b013e3181d018d0
15. Jenke AC, Stoek LM, Zilbauer M, Wirth S, Borusiak P (2011) Facial palsy: etiology, outcome and management in children. Eur J Paediatr Neurol 15(3):209–213. https://doi.org/10.1016/j.ejpn.2010.11.004
16. Chen WX, Wong V (2005) Prognosis of Bell's palsy in children— analysis of 29 cases. Brain and Development 27(7):504-508.https://doi.org/10.1016/j.braindev.2005.01.002

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 12, 2023

17. Eidlitz-Markus T, Gilai A,MimouniM, Shuper A (2001) Recurrent facial nerve palsy in paediatric patients. Eur J Pediatr 160(11):659–663. https://doi.org/10.1007/s004310100836
18. Pitts DB, Adour KK, Hilsinger RL Jr (1988) Recurrent Bell's palsy: analysis of 140 patients. Laryngoscope 98(5):535–540. https://doi.org/10.1288/00005537-198805000-00012
19. Salman MS, MacGregor DL (2001) Should children with Bell's palsy be treated with corticosteroids? A systematic review. J Child Neu r o l 16(8) : 565–56 8 . h t t p s : / / d o i . o rg/ 1 0 . 117 7 /088307380101600805
20. Barr JS, Katz KA, Hazen A (2011) Surgical management of facial nerve paralysis in the pediatric population. J Pediatr Surg 46(11):2168–2176. https://doi.org/10.1016 /j.jpedsurg. 2011.06.036