

Case Report

Infantile hemiplegia in pediatric dental set-up

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ABSTRACT

Infantile hemiplegia refers to brain injuries that occur before or at birth and lead to hemiplegia/total paralysis of one side of the body, including the face, arm and leg. The main purpose of this article is to provide valuable information to pediatric dentists about the review and treatment alternatives for patients with infantile hemiplegia. This article reports the case of a 12-year-old girl with a hemiplegia of left side of the body suffering with tooth ache and gum inflammation. The treatment performed was rehabilitation with oral prophylaxis and extractions of root stumps followed by thorough preventive regimen with periodic check-ups.

Key Words: Epilepsy, infantile hemiplegia, pediatric dentistry

INTRODUCTION

Hemiplegia/hem-i-ple-gi-a is derived from the Greek words hemi (half) and plegia (paralysis), meaning total paralysis of one side of the body, including the face, arm and leg. The term hemiparesis, used interchangeably with hemiplegia, is defined as weakness on one side of the body. Congenital or infantile hemiplegia refers to brain injuries that occur before or at birth and lead to hemiplegia. Juvenile hemiplegia is seen in patients who sustained injuries above the age of 1 year.

Hemiplegia is the physical manifestation of an injury to a specific area of the brain that controls motor function. Hemiplegia may develop suddenly, or evolve over days, weeks or months. In addition, some infants who appear normal in the newborn period may show symptoms of hemiplegia only after voluntary hand use develops, at about 4-5 months of age. Hemiplegia can also be short-lived or permanent.^[1]

Most often, abnormal labor is an important aetiological factor in the congenital group of hemiplegias (23%).^[2] Each area of the brain has special functions and areas of the brain also work in co-ordination. The left cerebral hemisphere controls the right side of the body and the right cerebral hemisphere controls the left side of the body. Thus an injury to the right side of the brain can lead to weakness on the left side of the body or left-sided hemiplegia.^[1,2]

It is very important to understand that the etiology and features of infantile hemiplegia are different from that of adult hemiplegia. The following manuscript, therefore, clearly reviews and discusses the specificity of clinical features of infantile hemiplegia through a presentation of a case report of a girl child with infantile hemiplegia in a pediatric dental set-up and a brief note on the management maneuvers with behavior modifications and follow-up of these less fortunate children.

CASE REPORT

History

A 12-year-old girl child reported to the department of Pedodontic and Preventive Dentistry of College of dental Sciences, Davengere, (Karnataka, India) with the chief complaint of pain in the right and left lower teeth region since 5 days [Figure 1]. Medical and

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family history was non-contributory. The patient was the younger of the two siblings born to parents of a non-consanguineous marriage. This is reported to be first dental visit of the patient. The patient was thereby taken by the authors to the medical practitioners for their opinion and further follow-ups. The brushing was not regularly followed by patient due to impaired cognitive abilities. The parents seemed to have neglected the child due to her ailment. There was no supervision of oral hygiene maintenance. The only reason the parents got the child was due to her tooth ache and bleeding from gums.

General physical examination

The patient seemed to have left hemiparesis with left facial weakness. The entire affected side of the body was noted to have significant hypoplasia. When reported to our department patient was afebrile. Examination revealed, left visual field neglect, slight flattening of the left nasolabial fold, a mild left flaccid hemiparesis and left hyperreflexia with left Babinski's reflex. The deep tendon reflexes were normal and pain sensation was intact. The anterior fontanelle was flat. There appeared to be severe left hand function impairment compared to the right hand [Figure 2]. Observations of growth in the legs revealed average differences of length of 2.5 mm [Figure 3].

The patient had lower than normal IQ level when assessed with basic Stanford-Binet scale. There also appeared to be a reduced verbal ability, with mild dysphasia. Impaired voluntary movements, such as protruding the tongue, expectorating, and lip puckering along with decreased chewing efficacy, lower biting and lip restraining forces were observed.

As per the behavior assessment of the child was concerned, the patient rated to have Frankel's positive scale with outbursts of severe temper tantrums.

Intra-oral examination

The patient presented with mixed dentition status. Examination revealed generalized gingival inflammation along with generalized gingival over-growth with plaque deposits. Grossly decayed 36, deep retentive pit and fissures with 46, 16 and 26 were present. There were also present retained root stumps with respect to 74, 75, 84, 85, 55 and 65. Macroglossia was also noticed. Patient presented with poor oral hygiene [Figures 4 and 5].

Treatment plan decided was to perform oral prophylaxis followed by fluoride application, sealant placement with 46, 16, 26 and extraction of 36 also

along with extraction of retained primary tooth root stumps followed by diet counseling.

Prior to initiating the planned treatment regimen, the patient was implied with desensitization behavior management technique. The patient was made to familiarize the surrounding operatory area with modeling of dental procedures on other child patients. Gradual introduction of less threatening and non-invasive procedures were done following which the actual treatment was performed.

Parents were reinforced to stop in-between meal snacking of the patient. Horizontal brushing technique was taught to the patient, which is easy to master and perform. To enhance the strength and tonicity of orofacial muscles, the child was also taught few oral-motor and tongue exercises. The parents were further suggested to initiate Speech therapy classes for the child.

Follow up

Upon follow-up after 2 weeks, the patient had mastered the cognitive ability of brushing. The calculus and stain deposits were nearly minimal. The oral hygiene index and the gingival index illustrated fair scores. The diet history chart scored minimum sugar intake and the patient was recalled for sealant application periodically, every 6 months. Following the positive outcome on the response from family, the authors also suggested the usage of an electronic toothbrush with customized handle for the patient. Continued motivation and follow-ups were also suggested.

DISCUSSION

In infantile hemiplegia, there appears to be a common combination of central softening and secondary sclerosis, along with *etat marbre* of the basal ganglia, accounting for the frequency of some degree of athetosis in the affected limbs.

Infantile hemiplegia differs in this aspect from the adult form. The explanation lies in the lesions being in the territory of venous drainage of the great vein of Galen in the infantile form. As Eardley Holland showed, the venous tributaries draining the central white matter of the hemispheres are end-veins stopping short of the cortex, but having the corpus striatum within the same venous system. With difficult prolonged birth and severe head molding, the vein of Galen is kinked on the straight sinus and severe asphyxia congestion,



Figure 1: Child patient with infantile hemiplegia



Figure 2: Left hand function impairment



Figure 3: Differences of length in legs



Figure 4: Intra-oral picture showing macroglossia



Figure 5: Intra-oral picture showing poor oral hygiene

edema, diapedesis of red cells affect the central areas of the hemispheres and the basal ganglia. In the adult hemiplegia, the damage is in the arterial pathway, middle cerebral artery usually.^[2]

The clinical features of infantile hemiplegia might be as well to present the resume of the symptom complex.

Hemiplegia

The hemiplegic element usually affects the arms, leg and the face with the arm always affected to a greater degree than the leg and face. The weakness is usually of a spastic type.^[3-5]

Epilepsy

Epileptic convulsions such as focal and Jacksonian type are often seen. Generalized seizures, psychomotor equivalents, petit mal are also observed.^[3,4]

Mental changes

The mental changes cover a wide range from virtual imbecility at the one extreme, the mildest retardation at the other. The most outstanding feature has been episodic outbursts of “temper tantrums” which usually have no adequate cause, are short-lived, and suggest the possibility of their being epileptic equivalents.^[3,6,7]

The patients with infantile hemiplegia will experience the weakness in the muscles of the orofacial area leading to poor control of oral secretions, a reduced gag reflex, and changes in their ability to masticate, leading to poor nutrition. The more severe the neurological damage is, more frequent is the effect on pathological primitive oral reflexes of rooting, suckle-swallow, biting and gagging in patients with hemiplegia.^[8] There is absence of the biting reflex and consequently, the higher is the risk of oral diseases in this population due to the difficulty to perform an adequate oral hygiene.

CONCLUSION

The motor as well as cognitive ability in children with such disorder is usually limited, which could be one of the reasons for poor maintenance of their oral hygiene. '*Prevention holds better than intervention*' in these patients. Thorough preventive regimen should be reinforced and as many as frequent possible periodic recalls should be scheduled.

The DMF index values are significantly higher along with the OHI-S index values in children with infantile hemiplegia. Rehabilitation protocols should aim to restore the strength and co-ordination of the orofacial muscles via oral-motor exercises (water holding, whistling, blowing etc.,) and tongue exercises. These patients may need additional help in home care. Meticulous oral hygiene, more frequent recalls, saliva substitutes, and fluoride application can aid in the maintenance of the dentition. Careful history taking, avoidance of lengthy appointments, and general

reassurance along with 'Tender-Love-Care'(TLC) approach are all important factors in the provision of dental treatment for such child patients.

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