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Dental Management of a Child Patient with Facial Palsy: A Case Report

Postępowanie stomatologiczne u dziecka z porażeniem nerwu twarzowego – opis przypadku

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A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation;
D – writing the article; E – critical revision of the article; F – final approval of article

Abstract

Facial palsy refers to severe or complete loss/weakness of facial muscle motor function, which may result from central or peripheral lesions. It is characterized by a reduction or absence of tears, diminished blinking reflex, inability to blow or whistle and deviation of angle of mouth to unaffected side. Though facial paralysis in children has been reported earlier, scant attention has been paid to oral hygiene, dental care considerations, and difficulties encountered by dentist. Facial palsy accompanied by hemiparesis affects the dentofacial structure and results in the inadequate maintenance of oral hygiene due to compromised musculature of the face and the upper extremities. Various preventive strategies should be implemented to improve the oral hygiene and health of these patients. In addition, parents should be positively reinforced and encouraged to do the same. The purpose of this case report is to describe dental treatment, the difficulties and the preventive strategies of a case of right hemiparesis and left side facial paralysis (**Dent. Med. Probl. 2016, 53, 3, 430–434**).

Key words: child, dental care, facial paralysis.

Słowa kluczowe: dziecko, opieka dentystyczna, stomatologiczne porażenie nerwu twarzowego.

Facial nerve paralysis is a partial or a complete dysfunction of the facial nerve. The underlying cause may be either a central or a peripheral lesion in the brain. It may be idiopathic and acute as in the case of Bell's palsy. The most common cause of the central type is a stroke and is accompanied by hemiparesis [1, 2]. In facial palsy, motor functions of facial musculature, salivary and lacrimal gland functions are affected as the nerve supplies these areas. The clinical features of facial nerve paralysis include deviation of mouth, asymmetrical smile, weakened facial musculature, excessive tearing, lack of eye closure, exposure keratitis, corneal abrasion, drooling of saliva which may cause angular cheilitis [3].

Facial palsy negatively impacts oral health. It affects facial muscles and the ability to chew

and swallow. Lack of manual dexterity, weakness of orofacial musculature resulting from hemiparesis causes food and saliva to pool in the mouth, which, in turn, causes plaque accumulation, thus increasing the risk of periodontal disease and dental caries [4, 5]. Facial palsy can also significantly affect the growth and remodeling of dentofacial structures, alter the muscle tone, cause an imbalance of forces, leading to the development of malocclusions [6, 7].

Although facial paralysis in children has been reported earlier [8, 9], few studies have been reported in the context of dental considerations and difficulties encountered by dentist. The purpose of this case report is to describe the dental treatments and preventive strategies of a case of right hemiparesis and left side facial paralysis.

Case Report

A 10.5 year-old female child patient was referred to a pediatric dental office by her physiotherapist for the treatment of carious teeth. As far as the child's medical history is concerned, the mother reported uneventful delivery at term via vaginal route. A negative history of trauma and viral infections was noted. Weakness of right upper limb and facial asymmetry was noticed at the age of 3 years, for which no medical practitioner was consulted. With time, improvement in the strength of right upper limb was observed by the mother. The history of drooling from the left angle of the mouth and feeding difficulties were noted with no history of difficulty in speech. A general medical practitioner was consulted at the age of 10.5 years for aesthetic concerns, who referred her to a pediatrician at a medical hospital. A provisional diagnosis of right hemiparesis with left facial palsy was made. A possible etiology of intra-uterine infarct in the left internal capsule of the cerebral hemisphere of the brain resulting from stroke was suspected. The exact etiology could not be confirmed as no other investigations were performed, because the parent was not willing. The condition was chronic and no oral steroids or any medication was prescribed by the pediatrician. The patient was referred to an ophthalmologist and a physiotherapist.

On ophthalmic examination, a mild lagophthalmos of left eye was noted. Lubricant eye drops (emollients) (Lubrex 0.5%, Micro Labs Ltd.), antibiotic drops (Ap drops: three times daily) and taping the left eye at night were advised to prevent corneal abrasions.

Muscle strength measurement by physiotherapist revealed +4/5 score for right upper and lower extremity and a 5/5 score for the left upper and lower extremity. Inability to blow air through cheeks or whistle, difficulty in smiling was noted. Right upper extremity strengthening exercise and left facial muscle stimulation was advised. Improvement in both the upper extremity and facial muscle tone was observed after three months of physical therapy and the patient was advised to continue the therapy.

Dental consultation: the patient gave a history of difficulty in mastication but there was no history of pain/swelling. Difficulty in brushing due to right upper limb weakness was noted. The child's mental development was appropriate for her age along with good scholastic performance and social interaction.

Extra oral examination revealed a deviation of the angle of the mouth to the right side, lip incompetence, an inability to maintain perioral seal,

Fig. 1. Left side facial palsy with deviation of angle of mouth to right side and incompetent lips.

tongue protuberance and difficulty in performing protrusive and excursive mandibular movements (Fig. 1).

An intra oral examination revealed adequate mouth opening. The patient was in the mixed dentition period, with erupted upper and lower permanent incisors as well as first permanent molars. Primary canines and both the primary molars were present in both the arches. Poor oral hygiene with excessive deposits of calculus on the lower anterior teeth, generalized marginal gingival inflammation, advanced caries, anterior open bite and posterior cross bite was noted (Fig. 2). A final diagnosis was charted after viewing intra oral periapical radiographs of teeth with advanced caries. A diagnosis of asymptomatic irreversible pulpitis in the upper right primary second molar, root resorption in all the primary first molars as well as lower right and left second primary molars along with occlusal dentinal caries in primary maxillary left second molar was made.

The treatment consisted of oral prophylaxis, pulpectomy of the primary maxillary right second molar, followed by cementation of the stainless steel crown, extraction of grossly decayed teeth with resorbed roots and restoration of primary maxillary left second molar with resin modified glass ionomer cement. No space maintainers were planned, as intra oral periapical radiographs revealed erupting premolars. Preventive therapy included pit and fissure sealants on all permanent molars and fluoride varnish application. No major difficulties were encountered during the treatment, except difficulty in isolation during restorative procedures due to drooling of saliva from the left angle of mouth. Safety glasses were used for eye protection during treatment. Though oral hygiene instructions were given, the patient found

Fig. 2. Intraoral view: **a** and **b** – open bite and posterior cross bite on both sides; **c** and **d** – deep carious lesions involving primary molars.

it difficult to maintain oral hygiene and oral prophylaxis had to be repeated in between the appointments. Oral hygiene instructions and brushing technique was demonstrated and reinforced at each appointment. Powered toothbrush was advised and brushing was to be done under the supervision of the mother. In addition, swabbing the gingiva with 0.2% chlorhexidine solution, twice daily was also advised. Referral to the orthodontist for the treatment of malocclusion was deferred as per the mother's desire. The patient was advised to visit the dental clinic every three months for follow-up regarding control of dental caries and oral hygiene maintenance. At three months recall interval, a repeat oral prophylaxis procedure was performed and oral hygiene instructions were reinforced.

Discussion

In the present case, the patient had facial palsy and hemiparesis, which could be a manifestation of cerebrovascular disease. Most children who have suffered a stroke present with hemiparesis. It should be noted that cerebrovascular disease is rare in young individuals. The cerebrovascular disease can result in compression of the nerve due to arteriospasm, venous congestion or ischemia leading to paresis of the facial nerve [2, 10].

Treatment of the patients afflicted by facial palsy and hemiparesis requires a multidisciplinary approach involving a pediatrician, a neurologist, a physiotherapist, an ophthalmologist, a pediatric dentist and cosmetic surgeons [8]. In our case, the ophthalmologist and physiother-

apist managed the problems connected with eye closure difficulty and decreased muscle tone, respectively.

The role of the dentists is important, as they are required to support the oral health care, remove dental foci of infection and rehabilitate the functions of the stomatognathic apparatus [1].

Facial palsy can cause facial disfigurement/distortion, masticatory problems, difficulty in smiling or talking, often resulting in psychological trauma. Intraoral appliances, constructed using thermoplastic polyurethane or flexible polymers, engaging upper and lower vestibular areas can be used to define the vestibule of the upper and lower jaw and serve to lift/stretch the buccal mucosa. The outcome of this procedure is the straightening of the lip line, balancing of loose facial musculature, reduction in trapped air bubbles, prevention of pocketing of food particles, which result in improved mastication and speech. This is an economic way of improving facial asymmetry and oral dysfunction, and is a procedure that can be carried out at any age [11]. In the present case, however, the mother refused this procedure.

Hemiparesis and facial palsy results in inadequate maintenance of oral hygiene, because the weak upper extremities compromise manual brushing skills and the weak facial musculature affects the natural cleansing mechanisms of the oral cavity. Frequent maintenance appointments are required to monitor the oral health [2]. Technical aids, such as two and three headed toothbrushes, powered toothbrushes, modifications of manual toothbrushes with the addition of larger handle grips can be useful. Fluoride rinse may not be useful in facial palsy patients, as it may be difficult

for the patient to use. In such cases, swabbing the gingivae with 0.2% chlorhexidine solution or applying 1% chlorhexidine gel with a finger, a toothbrush or in individually made soft plastic trays are effective alternatives [12, 13].

Patients with facial palsy often present with altered quality and/or reduced quantity of saliva. This can lead to an increased risk of caries formation. In the present case, though the salivary flow rate was not measured, it was observed that the consistency of the saliva was viscous, thick and ropey. Saliva substitutes, fluoride varnish application, casein phosphopeptide-amorphous calcium phosphate complexes, which can be applied daily using a dry gauze-protected finger or a cotton bud, can be a useful preventive therapy [12].

Eating difficulties, loss of appetite and failure to gain weight are often encountered in hemiparesis and facial palsy patients due to the poor masticatory function [12]. In the present case, the patient was advised to take multi-vitamin supplements, as well as to increase the intake of energy-rich food supplements, to sip water often and to eat at regular intervals during the day.

During the dental procedures, safety glasses or an eye patch should be given for eye protection. In the case of inadequate mouth opening, the procedures can be carried out under general anesthesia or conscious sedation after anesthetic and pediatric evaluation [5]. All the procedures in the present case were adequately performed at chair-side, as there was an adequate mouth opening.

In the present case, the mother had a negative approach towards treatment protocol and was un-

willing to discuss the child's problems, thus depicting the parental stress associated with care of children with special health care needs. In addition to the medical problems, the dental care of the child with special health care needs is also governed by social and economic factors. Parents may incur additional expenditures related to health care for children with facial paralysis than typical children. Parental attitude and priorities may also be a barrier to oral health care. Parents are often possessive about their child and reluctant to discuss their problems with dental health professionals because of emotional and psychosocial factors [14]. Dentist should be aware of the daily challenges these parents face with their special health care needs children, so that dental health care can be carried out with patient-centered approach, giving due consideration to parents' situations [14, 15].

Conclusion

Facial palsy and hemiparesis affect the functioning of oro-facial musculature, thus causing a negative impact on the growth and remodeling of dento-facial structures as well as oral health. Local oral inflammatory processes may affect the general health and increase the risk for cardiovascular episodes and stroke. In the present case, comprehensive dental care for the patient along with the maintenance of oral hygiene was emphasized. It is a challenge to the dental clinician to understand the functional needs of the child and implement the treatment protocols in spite of the negative parental attitudes associated with such cases.

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