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Congenital Muscular Torticollis: The importance of a thorough head and neck examination in the paediatric dental patient. Case report

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Abstract

The New Zealand Dental Association and Paediatric Society of New Zealand encourages infants establish regular dental check-ups (KidsHealth, 2022). Dental professionals should initiate referrals to appropriate physicians when disorders arise, if gone undiagnosed at previous child visits to assess health. These professionals include oral health therapists, general dentists, paediatric dentists, and well child providers. Torticollis is one of those disorders, which if diagnosed and treated with early intervention, may be corrected. In the literature, the best time for intervention for a child diagnosed with congenital muscular torticollis is in the first year of life. The dental professional is one of the first to encounter these children at an early age and should have the knowledge to identify the symptoms and refer the patient appropriately. The purpose of this report is to describe a case involving a 7-month-old, caucasian male with congenital muscular torticollis who presented for diagnosis, therapy and rehabilitation, and to educate the paediatric dental professional to identify the disorder. The child was monitored throughout the treatment for a period of 5 months during which time the torticollis resolved.

Introduction

Torticollis is a deformity (either congenital or acquired), characterised by lateral inclination of the head to the shoulder, with torsion of the neck and deviation of the face. It is a condition in which the sternocleidomastoid muscle (SCM) is effectively shorter on the involved side, leading to ipsilateral tilt and contralateral rotation of the face and chin (Kuo et al., 2014; Kaplan et al., 2018). Skull and facial asymmetry or plagiocephaly may also be present (Chang et al., 2000). Clinically, the child exhibits a flattening of the occiput contralaterally and depression of the malar prominence ipsilaterally. Additionally, there is a high incidence of associated hip dysplasia and ipsilateral mandibular hypoplasia (Morrison and MacEwen, 1982). The diagnosis is clinical and may be classified into one of the following three groups: (1) palpable sternomastoid tumour or mass, (2) muscular torticollis (thickening, and tightness of the sternomastoid muscle) or, (3) postural torticollis (torticollis but no muscle tightness or tumor) (Kaplan et al., 2018; Jaiswal et al., 2005). A thorough evaluation must be undertaken to exclude other causes of abnormal neck posture such as congenital or acquired conditions of the cervical spine, ocular conditions such as squinting or visual field defects, infections of the ear or throat, or intracranial lesions (Jaiswal et al., 2005). The incidence of torticollis ranges from 3.9% to 16% in a normal newborn population (Chen et al., 2005; Stellwagen, 2008). There seems to be a slight male predominance with a relative ratio of approximately 3:2 (Cheng and Au, 1994) and the condition is more frequent in infants who are exposed to opioids in utero (McAllister et al., 2018).

Controversy remains regarding the management of torticollis, although manual stretching is still the most common treatment modality for both sternomastoid tumor and muscular torticollis (Kuo et al., 2014; Morrison and MacEwen, 1982). In one study, manual stretching had success rates of 61% to 85% when treatment was initiated over one year of age (Cheng et al., 2001). Evidence suggests that earlier intervention will result in better outcomes, making early referral preferable (Petronic et al., 2010; Lee et al., 2017). Patients with a palpable sternomastoid tumour or muscular torticollis usually require surgery when a diagnosis is delayed or when conservative management plan fails.

Case Report

A male infant aged 7-month and 9-day-old (corrected age of 6 months and 23-days) presented to a developmental clinic of which paediatric dentistry is a part of the team. The patient presented with lateral inclination of the head towards his left shoulder, with torsion of the neck and deviation of the face. His parents expressed concern that the child did not perform tasks as well as his identical twin. While the child was sitting on the clinic table was observed to have a lateral cervical spine deviation and to favour one side. The history was suggestive of intra-uterine crowding and malposition during pregnancy.

An examination showed the boy was of good health and average build and health, whose head tilted to the left side and face rotated to the opposite side (Figure 1). The left sternocleidomastoid muscle was thickened and cord-like with a slight development of plagiocephaly (Figure 2). There was no facial asymmetry and the mandible had a full range of motion. The patient had delayed gross motor skills due to his decreased ability to move his head and the rigidity of his trunk. There were no other general or systemic examination abnormalities.

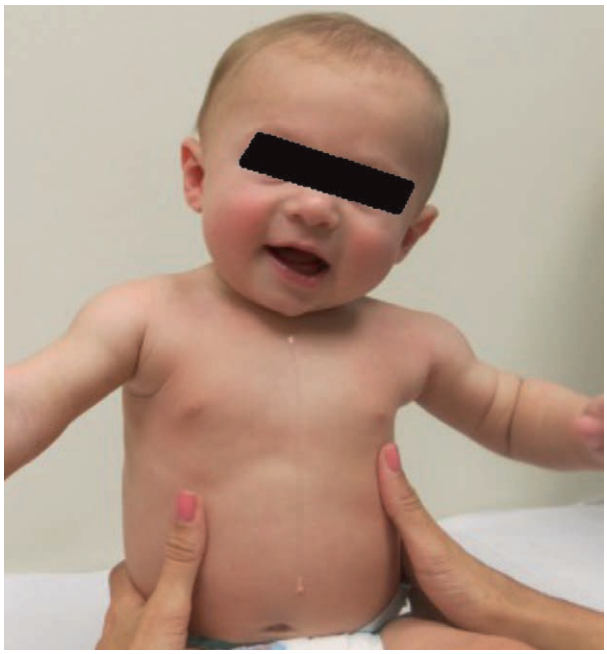

Figure 1. Pre-therapy appearance.

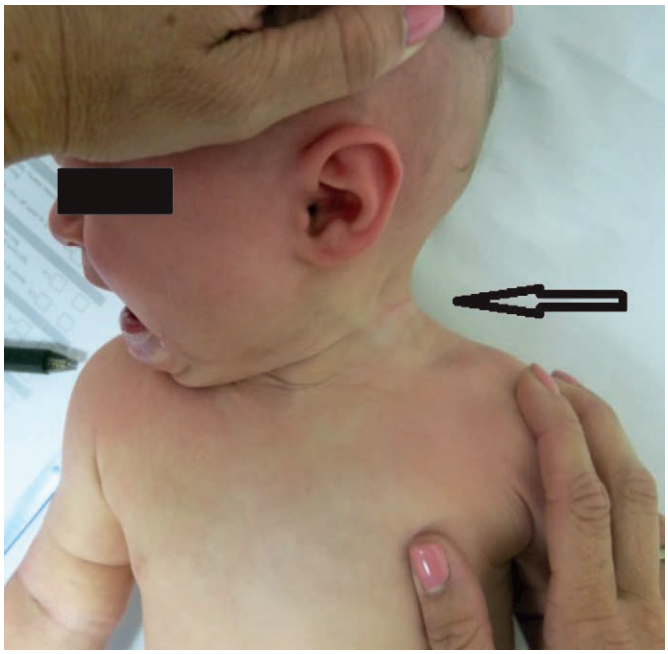

Figure 2. Tightened sternocleidomastoid muscle.

The hips and lower extremities were normal. The child was diagnosed with congenital muscular torticollis and referred to physical therapy.

A physical therapist performed manual stretching on the day of assessment session. The parent was taught to carry out a home program of active positioning and manual stretching while the child was positioned on a changing station mat. The parent was asked to perform manual stretching at least three times a week. Each session was to include fifteen manual stretches of the tight muscle with a gentle force sustained for one second and then a rest period of ten seconds between stretches. One such stretch was to tilt the head away from the side of the shortened muscle until the child's ear touched the shoulder of the unaffected side. Another stretch was to be performed while the child was in a supine or sitting position and the child's shoulder was stabilise by placing one hand on the shoulder of the unaffected side, while the other hand then gently rotated the infant's chin so that the chin touched the tip of the shoulder of the affected side. The parent was also advised to add a massage technique using a natural oil, such as sunflower, safflower, or grape seed oil, and trace the SCM belly with a parent's finger. Simultaneously the patient was started on a vigorous physiotherapy regimen, involving manipulation of the head and neck through a full range of movements. After four months, there was a follow-up at the clinic to assess the patient progress. Upon initial assessment the patient had facial symmetry with minimal head tilt to the left, where the sternocleidomastoid muscle had previously been tight (Figures 3 and 4). Overall, the patient responded well and was able to sit appropriately while maintaining his head in a vertical position.

Discussion

Congenital muscular torticollis is a condition involving a tight sternocleidomastoid muscle on one side. It is often recognised in children as young as two to four weeks old. It is hypothesised that the cause is due either to intra-uterine malposition, crowding from multiple fetuses during pregnancy, or trauma from birth causing rupture of the fibres of the sternocleidomastoid or the vessels supplying it. Due to these problems, degeneration of the affected fibres occurs and is followed by fibrous tissue replacement, resulting in contracture or failure of the growth of the muscle (Ho et al., 1999; Hardgrib et al., 2017). Muscular torticollis may be subdivided into three types. Type 1 is the sternocleidomastoid tumour type, which consists of torticollis with a palpable mass. The mass, well-circumscribed and firm to touch, is often referred to as a "pseudotumour" or "tumour" of the SCM. This mass usually regresses within the first year of life and is the most common presentation. Type 2, known as muscular torticollis, consists of torticollis with tightness of the SCM, but no palpable tumour, while Type 3 is a postural torticollis without a mass or tightness of the SCM (Kaplan et al., 2018; Cheng et al., 2000).

The sternocleidomastoid muscle is a paired muscle that divides the neck into anterior and posterior triangles. The muscle originates from two rounded tendons, one from the upper portion of the manubrium sterni and the other from the medial third of the clavicle. Shortly after this origin, the two tendons combine into a muscle bundle arranged in parallel fibres that run in the neck superiorly and posteriorly and insert into the mastoid process of the temporal bone and the superior nuchal line of the lateral aspect of the occipital bone. Contracting in unison, the paired muscles extend the head at the atlanto-occipital joint and flex the cervical vertebrae. Contraction of one muscle alone pulls the mastoid process toward the sternoclavicular joint on

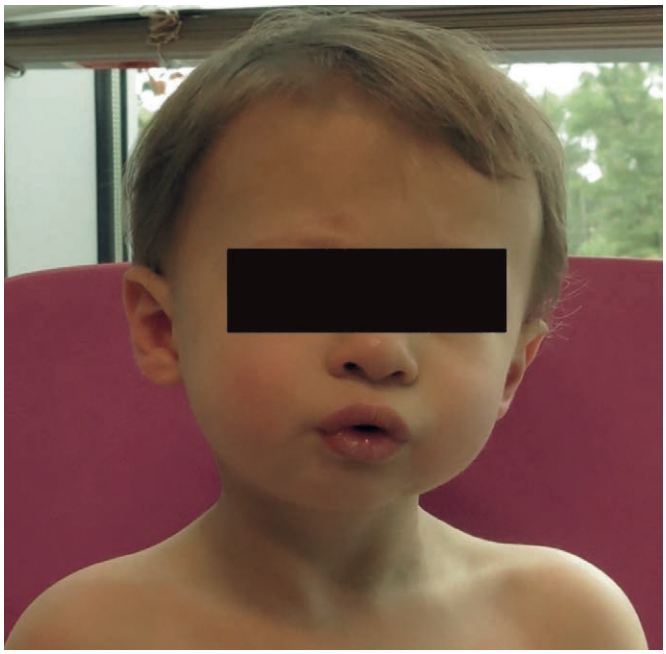

Figure 3. Final evaluation – frontal view.

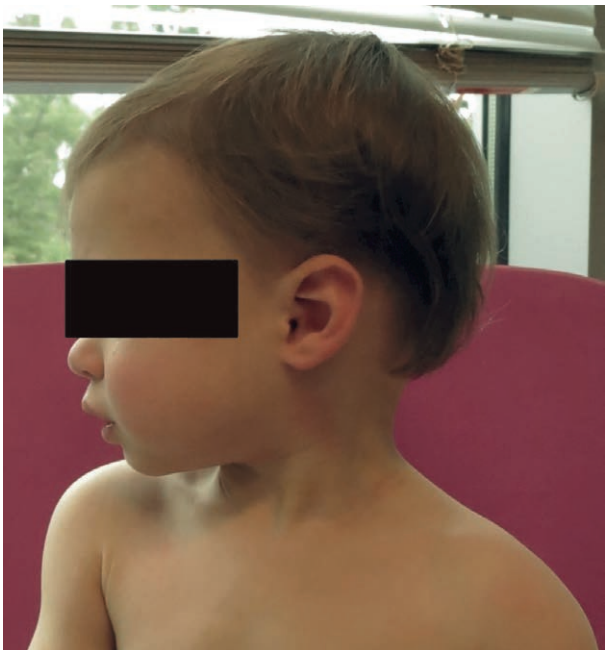

Figure 4. Final evaluation – profile view.

the ipsilateral side. If the condition is untreated, the other muscles on the affected side and the deep fascia become shortened as well (Johnstone and Maran, 1986).

Due to the unique presentation of the head tilt and facial rotation to the opposite side, the diagnosis or torticollis is clinical. To determine the presentation of torticollis, a thorough evaluation of the child must be undertaken to exclude other causes of abnormal posture such as congenital or acquired conditions of cervical spine, ocular conditions such as squints or visual field defects, infections of the ear or throat, and intracranial lesions (Jaiswal, 2005). The main treatment modalities are physiotherapy and/or surgery. Although approximately 60-70% of SCM tumors resolve spontaneously during the first year of life, early physical therapy is initiated if there is any lack of rotation from fibrosis (Do 2006).

The following are recommendations for dentists to educate parents concerning a child who has signs and symptoms of congenital muscular torticollis. This advice includes positioning the child to help keep his/her head straight or turned to the side opposite the torticollis. Place the toddler's toys and other bright objects on the child's non-preferred side. Position the crib perpendicular rather than parallel to the wall allowing child to look in both directions. One of the best treatments to both prevent and treat torticollis, is a method termed "tummy time," where the child is placed on his/her stomach several times throughout the day. This position helps the child to strengthen his/her neck muscles and helps to avoid flattening of the back of the head. In a true case of muscular torticollis, early diagnosis and physical therapy results in the best outcome (Sargent et al., 2019).

Recently, new techniques and procedures have been developed which could alter the way congenital muscle torticollis is addressed. Treatment using Botulinum toxin (Botox) injections can be used to relax the tight muscle. In one study, where 14 patients received Botox, only one required sugery (Joyce 2004). Current physical therapy protocols indicate early intervention and manual stretching as the best noninvasive treatment methods for correcting and managing congenital muscular torticollis.

Dental professionals treating children should be trained in thorough head and neck examinations to know what to look for in an infant evaluation. Early diagnosis is important with congenital muscular torticollis.

Conclusion

Congenital muscular torticollis is a common pediatric musculoskeletal condition, that can be evident and therefore diagnosed soon after birth. The dental clinician is in a unique position, due to seeing children in the first year of life, completing a head and neck exam, and therefore having the ability to diagnose and refer if the condition presents. This case is a reminder of the importance of a proper head and neck exam, and how to properly diagnose torticollis; early referral has been shown to have superior results for young children.

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AD: Conception of work, drafting of article
EJB: Drafting of article, critical revision of article, final approval of the version published
JHU: Drafting of article, critical revision of article, final approval of the version published

Consent was obtained from the parents of the patient for this case report. All authors agree the work is original and has not been published elsewhere.

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