Int J Biol Med Res. 2012; 3(3): 2274-2276

BioMedSciDirect Publications

Contents lists available at BioMedSciDirect Publications

International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com

Case report

Congenital Muscular Torticollis of the Sternocleidomatoid Muscle in an Infant

*[a]Lennox Anderson-Jackson , Donovan A. McGrowder[b]

[a]Department of Pathology, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston, Jamaica
[b]Radiology West, Montego Bay, Jamaica,

ARTICLE INFO

Keywords:
Congenital muscular torticollis
Sternocleidomastoid muscle
Infant

ABSTRACT

Congenital muscular torticollis (CMT), a painless condition is the most common form of torticollis in children. CMT usually presents during infancy with a tight sternocleidomastoid muscle (SCM) causing the child's head to be tilted to the ipsilateral side. A case study is presented of a 9-month-old infant who had been medically diagnosed with the disorder. The left SCM muscle was prominent and the infant's head was tilted to the ipsilateral side and chin appears rotated. An ultrasound examination of the neck musculature suggested fibromatosis colli (pseudo-tumor) of the left SCM. A treatment plan for the infant includes physical therapy with active stimulation and stretching of the restricting muscle. There was subsequent improvement in the infant's neck range of motion and head position.

1. Introduction

Congenital muscular torticollis (CMT) is the most common musculoskeletal disorder in infancy [1]. In patients with CMT, the sternocleidomastoid muscle (SCM) is effectively shortened on the involved side, leading to ipsilateral tilt and contralateral rotation of the face and chin. As a result of fibrotic changes of the SCM, the unilateral contracture may subsequently result in plagiocephaly, skull and facial asymmetry [2].

CMT is a common finding in the newborn period with an overall incidence that can be as high as 1:250 live births. The variability is reported to range from 0.3 to 2.0% [3]. There seems to be a slight male predominance with a relative ratio of approximately 3:2 [3]. The right-hand side is more commonly affected. Muscular torticollis can be subdivided into three groups. These are (i) sternocleidomastoid tumor (SMT) which consists of torticollis with a palpable tumor, that is, fibromatosis colli, (ii) muscular torticollis (MT) which consists of torticollis with tightness of the SCM, but no palpable tumor, and (iii) postural torticollis which consists of congenital torticollis with all the clinical features of torticollis but with no demonstrable tightness nor tumor of the SCM [4,5].

Multiple theories about the etiology of CMT exists, including intrauterine crowding or vascular phenomenon, fibrosis from peripartum bleeds, a compartment syndrome, and a primary myopathy of the SCM [6]. A history of difficult birth has been noted in 30-60% of patients with torticollis [7]. We present a case of CMT as a result of fibromatosis colli of the SCM in an infant.

2.Case Report

A 9-months old infant presented with a deformity of the neck which had been observed soon after birth and had progressively increased. The infant's head was tilted to the ipsilateral side and chin appears rotated (Figure 1a, b, and c). The infant had a history of difficulty doing tummy time, late creeping, did more of a belly crawl, and her head would sit on her chest to the right side when asleep. When she started to walk she seemed to walk with a limp to one side and would fall more to the right side when tired. Whenever the infant's head was propped up with a blanket, she would move her body away from the blanket in order to position her head with the extreme tilt to the ipsilateral side.

An ultrasound examination demonstrates a shortened and a thickness of 0.50 cm of the mid portion of the left SCM. The right SCM appeared normal, with a muscle thickness of 0.26 cm in the mid portion. The finding was consistent with left fibromatosis colli of the left SCM.

At age 22 months the infant was referred for another ultrasound examination in addition to an X-ray of the cervical spines. Sonographic images of the neck demonstrate increased thickness of 0.61 cm of the left SCM. The right SCM was 0.27 cm which is considered normal (Fig. 2a). The diagnosis was still

* Corresponding Author : Dr. Donovan McGrowder
Department of Pathology,
Faculty of Medical Sciences,
The University of the West Indies,
Mona Campus, Kingston 7, Jamaica W.I.
Tel: 876-927-1410; Fax: 876-977-1811;
E-mail: dmcgrowd@yahoo.com

consistent with fibromatosis colli of the left SCM. Anterior-posterior and lateral X-rays of the cervical spine was done and demonstrates no acute bony abnormality.

The infant was immediately referred for further consultation with paediatrician in New York, United States of America. Several tests were performed and it was concluded that the rotation of the child's head was equal on both sides and there was a 10 degree difference in the tilt to the right. It was determined that it was not serious and with regular exercise that she would grow out of it.

Fig. 1 Showing rotation of head tilt to right and rotation of chin at birth (a) and 9 months old (b) and (c).

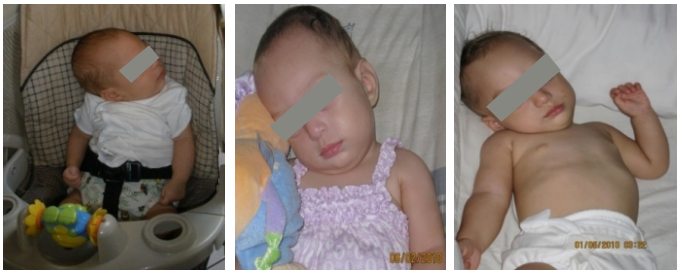
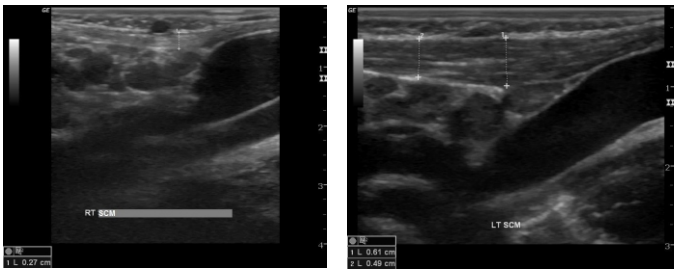


Fig. 2 (a, b): Longitudinal images through the right and left neck respectively.



The patient was referred to a physical therapist and a series of exercise was prescribed. The basics of the programme with the physical therapist include manual stretches of the neck in flexion/extension, lateral bending, as well as rotation. The physical therapist performs three sets of 10 stretches, holding the stretch for 1s, with a 10s rest in between. The stretches were done three times per week, with additional home activities carried out by the parents consisting of active positioning. Other exercises include lifting or pushing heavier objects with hands, swimming and any movements that would help strengthen her core muscles. There was subsequent improvement in the infant's neck range of motion and head position.

3.Discussion

Congenital muscular torticollis is a painless condition usually presenting during infancy with a unilateral contracture of the SCM causing the child's head to be tilted to the ipsilateral side. Limited neck motion and a palpable tumor within the muscle are often present. The etiology of torticollis in the neonate can be due to the stretching of the SCM during delivery which results in the development of a fibromatosis colli (pseudo-tumor) and subluxation of the upper cervical vertebrae from malposition in-utero or a difficult birth [8]. Primigravidity, maternal hypertension, oligohydramnios and growth retardation are also known to be correlated with CMT [9]. This particular case highlights CMT as a result of fibromatosis colli (pseudo-tumor) of the SCM.

In this case an ultrasound examination was performed at presentation and the thickness of the SCM was measured at the thickest point of the SCM on both sides on the longitudinal view of the ultrasound images. Ultrasound is the imaging modality of choice for radiologic evaluation of CMT and is also used for the follow-up to judge the effectiveness of stretching exercise [10].

The infant in this study had an ultrasonographic thickness ratio of the SCM (shortened SCM thickness/normal SCM thickness) at 9 months and 22 months of 1.92 and 2.26 respectively. Lim et al. reported that children with CMT required greater than 12 months of stretching exercise and their ultra sonographic thickness ratio of the SCMs was 3.38 (range: 2.45 to 4.31). The ultra sonographic thickness ratio was 2.04 (range: 1.14 to 2.94) for children with CMT requiring less than 12 months of stretching exercise [11].

A thorough evaluation of the child was undertaken which included X-ray to exclude other causes of abnormal neck posture such as congenital or acquired conditions of the cervical spine, as well as ocular conditions like squints and visual field defects, infections of the ear and throat and intracranial lesions.

The main treatment modalities are physiotherapy and surgery. First-line management for CMT includes early physical therapy with stretching of the restricting SCM and molding helmet therapy for the plagiocephaly [12]. Non-operative intervention such as a regimen of controlled manual stretching exercises was found to be associated with positive outcomes in over 90% of the cases, if the treatment is started before the age of one year [13]. Cheng and Au reviewed a large group of patients with infantile torticollis and found that 97 percent of all infantile torticollis cases resolved with conservative treatment, active stimulation, and a passive stretching program. Furthermore, a mean treatment period of less than 6 months was needed for those patients who responded to treatment [14].

Surgical treatment is usually required when diagnosis is delayed or following failure of conservative management. It must be undertaken before facial asymmetry and secondary changes in the cervical spine have developed [15]. Yu et al. recommended surgical release before one year of age to prevent and reverse any cranial deformity because this deformity appears on the cranium and cranial base during early life [16].

The use of Botox injections to relax the tight muscle is a new form of treatment being tried by some practitioners [17]. Injected botulinum toxin causes the SCM to paralyze, making it easier to be stretched, and lessens the size of the muscle mass [18]. Oleszek et al. reported that they used botulinum toxin type A in the treatment of children with CMT and who failed to improve their range of motion with stretching exercise. Seventy-four percent of the

children had improved cervical rotation or head tilt after the injections [19]. Futhermore, Joyce et al. reported high satisfaction scores after an average follow-up length of 22 months in the treatment of recalcitrant CMT by Botox. Their study shows that there may be a potential role for Botox in the future of CMT [20].

4.Conclusion

This particular study demonstrates that congenital muscular torticollis of the left SCM resulted from fibromatosis colli (pseudo-tumor). This case shows that controlled manual stretching and active positioning stimulation are safe and effective in the treatment of congenital muscular torticollis of the left SCM. There was an overall improvement in the infant's neck range of motion and head position.

Acknowledgements

The authors wish to thank Lana Chin for her granting her permission, and making the information available for the case. Consultant Radiologist, Dr. Konrad Kirlew for his permission to carry out the case study.

Conflict of Interest:

The authors declare that there is no conflict of interest

5.References

1. Yim SY, Lee IY, Park MC, Kim JH. Differential diagnosis and management of abnormal posture of the head and neck. J Korean Med Assoc. 2009; 52: 705-718.
2. Robin NH. Congenital muscular torticollis. Pediatr Rev. 1996; 17: 374-375.
3. Cheng JC, Au AW. Infantile torticollis: a review of 624 cases. J Pediatr Orthop. 1992; 14: 802-808.
4. MacDonald D. Sternocleidomastoid tumor and muscular torticollis. J Bone Joint Surg Br. 1969; 51B: 432-443.
5. Cheng JC, Tang SP, Chen TM, Wong MW, Wong EM. The clinical presentation and outcome of treatment of congenital muscular torticollis in infants-a study of 1,086 cases. J Pediatr Surg. 2000; 35: 1091-1096.
6. Tang S, Liu Z, Quan X, Qin J, Zhang D. Sternocleidomastoid pseudotumor of infants and congenital muscular torticollis: fine-structure research. J Pediatr Orthop. 1998; 18: 214-218.
7. Cheng JC, Wong MW, Tang SP, Chen TM, Shum SL, Wong EM. Clinical determinants of the outcome of manual stretching in the treatment of congenital muscular torticollis in infants. A prospective study of eight hundred and twenty-one cases. J Bone Joint Surg Am. 2001; 83A(5): 679-687.
8. Fallon JM, Fysh PN. Chiropractic care of the newborn with congenital torticollis. J Clin Chiropr Pediatr. 1997; 2: 116-121.
9. Toto BJ. Chiropractic correction of congenital muscular torticollis. Manipulative Physiol Ther 1993; 16: 556-559.
10. Chen MM, Chang HC, Hsieh CF, Yen MF, Chen TH. Predictive model for congenital muscular torticollis: analysis of 1021 infants with sonography. Arch Phys Med Rehabil 2005; 86: 2199-2203.
11. Lim D, Kwon W, Cha SW, Yoo H, Lim S, Park JM, Kim MS. The sonographic correlation between the sternocleidomastoid muscle thickness and the prognosis of congenital muscular torticollis. J Korean Soc Radiol. 2009; 60: 133-138.
12. Clarren SK. Plagiocephaly and torticollis: Etiology, natural history, and helmet treatment. J. Pediatr. 1981; 98: 92-95.
13. Cheng JC, Wong MW, Tang SP, Chen TM, Shum SL, Wong EM. Clinical determinants of the outcome of manual stretching in the treatment of congenital muscular torticollis in infants. A prospective study of eight hundred and twenty one cases. J Bone Joint Surg Am. 2001; 83A(5): 679-687.
14. Cheng JC, Au AW. Infantile torticollis: A review of 624 cases. J Pediatr Orthop. 1994; 14: 802-808.
15. Burstein FD, Cohen SR. Endoscopic surgical treatment for congenital muscular torticollis. Plast Reconstr Surg. 1998; 101(1): 20-26.
16. Yu CC, Wong FH, Lo LJ, Chen YR. Craniofacial deformity in patients with uncorrected congenital muscular torticollis: an assessment from three-dimensional computed tomography imaging. Plast Reconstr Surg. 2004; 113: 24-33.
17. Luther BL. Congenital muscular torticollis. Orthop Nurs. 2002; 21: 21-27.
18. Collins A, Jankovic J. Botulinum toxin injection for congenital muscular torticollis presenting in children and adults. Neurology. 2006; 67: 1083-1085.
19. Oleszek JL, Chang N, Apkon SD, Wilson PE. Botulinum toxin type a in the treatment of children with con genital muscular torticollis. Am J Phys Med Rehabil. 2005; 84: 813-816.
20. Joyce MB, DeChalain TM. Treatment of recalcitrant idiopathic muscular torticollis in infants with botirlinum toxin type .A. J Craniofacial Surg. 2004; 16: 321-327.