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Is there an association between a juvenile idiopathic scoliosis/adolescent idiopathic scoliosis and children diagnosed with a congenital muscular torticollis in early infancy?

The introduction of a proposal

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Student: Rachel Cott, PT FH, MScPT i.A.
Contact: cottrac1@students.zhaw.ch
Lecturer: Prof. Dr. Otto Kruse/ Dr. Morgan Powell

The introduction of a proposal: Rachel Cott

Introduction:

In the last twenty- five years working as a physical therapist, the number of patients with juvenile idiopathic scoliosis (JIS) and adolescent idiopathic scoliosis (AIS) referred to my practice has steadily increased. In the same period, the number of children with congenital muscular torticollis (CMT) has also increased, accompanied by a plagiocephaly (Kaplan, Dole, & Schreiber, 2017).

Idiopathic scoliosis (IS) is defined as a three- dimensional spinal deformity with no identifiable causes in a growing child who is otherwise healthy. On inspection, the child can be seen with trunk asymmetry, which is accentuated while forward bending. This is because the costal or lumbar hump becomes more prominent in this position. A costal hump evolves as the ribs on the thoracis concave side twist in a ventral direction (Weiss, Moramarco, et al., 2016).

For IS, three different classifications are made based on age:

infantile idiopathic scoliosis (0-3 years), juvenile idiopathic scoliosis (4-9 years), adolescent idiopathic scoliosis (from 10 years until the end of adolescent growth). AIS is the most common form of pediatric scoliosis (Menger & Sin, 2018). The prevalence of AIS is about 1% to 3% (Menger & Sin, 2018).

Treatment is indicated because scoliosis may lead to reduce quality of life and diverse health issues in some patients (Weiss, Karavidas, Moramarco, & Moramarco, 2016). JIS/AIS is difficult to prevent. Treatment consists of physical therapy and bracing has been the most important non-surgical treatment modality. Presently, the most widespread method of physical rehabilitation for the treatment of scoliosis is the Schroth method of Germany (Moramarco & Borysov, 2017). In children with a Cobb angles of > 50°, a complex surgical intervention is the only option to reach a good cosmetic result and to reduce secondary problems. Unfortunately, many JIS/AIS remain undiscovered until the age of ten years (Luk et al., 2010). If recognized at that age, the scoliosis has often progressed and thus, the operative intervention is the only options.

Congenital muscular torticollis (CMT) is a rare congenital musculoskeletal disorder characterized by unilateral shortening of the sternocleidomastoid muscle (SCM). It presents in newborn infants or young children with a reported incidence ranging from 0.3% to 2% (Nilesh & Mukherji, 2013). The shortening of the SCM on the involved side is associated with an ipsilateral head tilt and a contralateral rotation of the face and chin (Nilesh & Mukherji, 2013). The incidence of SCM has increased in association with the "Back to Sleep" campaign for sudden infant death prevention (Surprenant, Milne, Moreau, & Robert, 2014). Further, referrals for torticollis/plagiocephaly have increased significantly as primary care

provider have become more proficient at recognizing SCM and referring these patients for physical therapy. Furthermore, an early identification and treatment of CMT is critical. The consolidation of a CMT may lead to an asymmetric posture, resulting in a scoliosis.
The aim of this study is to find an association between a JIS/AIS and children who were diagnosed with a CMT in early infancy.
The specific research question is thus:
Is there an association between a juvenile idiopathic scoliosis/adolescent idiopathic scoliosis and children diagnosed with a congenital muscular torticollis in early infancy?
Finding a risk factor for later JIS/AIS will allow to identify those children at highest risk for JIS/AIS and may initiate JIS/AIS treatment earlier. The costs for a surgical treatment are much higher than for a conservative treatment with physical therapy. Therefore, the prevention of JIS/AIS is relevant for public health and may decrease health care cost.
Previous research about this question could not be found. While there are many studies about JIS/AIS and CMT, research on the association between these two diagnoses is lacking in the literature. The role of CMT in early infancy in the etiology of JIS/AIS is unknown.
In Switzerland, there are twelve well- child visits: In the first life week, at one month, two months, four months, 6 months, 12 months, 2 years, 4 years, 6 years, 10 years, and 14-16 years. If there would exist an association it would be important to see the children again between 6 and 10 years and between 10 and 14 years (www.swiss-paediatrics.org).
If an association between a JIS/AIS and children who were diagnosed with a CMT in early infancy would exist, health care professionals could pay closer attention to those infants with the diagnosis of CMT during well- child care visits.

Method:

This paper follows a case control study design in which the cases were children between 6 and 16 years with juvenile idiopathic scoliosis/ adolescent idiopathic scoliosis and the controls were children who have no idiopathic scoliosis.
The exposition would be “congenital muscular torticollis” in the early infancy.

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