**Torticollis and Plagiocephaly**

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**Objectives**

To gain a better understanding of:

- WHAT are torticollis and plagiocephaly
- WHY the incidence has increased so dramatically
- WHO is most at risk
- HOW you can help with prevention
- WHEN intervention should be initiated

**WHAT is torticollis?**

- The word torticollis describes a posture characterized by ipsilateral side flexion (± flexion or extension) and contralateral rotation

N.B. Torticollis is named by the direction of the TILT, not the TURN.

**Left torticollis**  **Right torticollis**

**Review of Anatomy**

- Muscle most commonly associated with torticollis is the sternocleidomastoid (SCM)
- There is a SCM on each side
  - 1 can be tight
  - 1 can be weak
  - A combination of both

- Other soft tissue (skin, fascia) and muscles may also be affected
  - Splenius capitis
  - Levator scapula
  - Platysma
  - Scalenes
Types of Torticollis

- Congenital muscular torticollis (CMT)
  - Intra-uterine positioning
  - Fibromatosis
  - Generally, shortening of SCM on one side
  - Incidence varies from 0.4-1.9% (Karmel-Ross, 1997) to 16% (Stellwagen, 2008)
- Can also be acquired after birth
  - SCM shortening less likely
  - Contralateral weakness generally the problem

Differential Diagnosis

- Less common
  - Klippel-Feil syndrome
  - Cervical spine articular malformations, subluxations, or dislocations
  - CNS lesions (cervical spinal cord, intracranial) or peripheral nerve lesions
  - Benign paroxysmal torticollis
  - GERD (Sandifer’s syndrome)
  - Ocular torticollis
  - Vestibular torticollis

Associated Findings

- Plagiocephaly
- Gross motor delays
- Hip dysplasia
- Brachial plexus injuries
- Clubfoot/metatarsus adductus

WHAT is plagiocephaly?

- Changes in head shape
  - Posterior flattening
  - Ear shift
  - Forehead bossing
  - Facial asymmetry

Causes of Plagiocephaly

- As with torticollis, can be:
  - Congenital (due to intra-uterine positioning)
  - Acquired (due to repetitive and/or prolonged positioning on one side of the head)

- Cited incidence varies widely, from less than 1% to 48%
- Asymmetries develop due to:
  - Flattening of bone which is not yet fully calcified
  - Shifting of individual cranial bones due to open sutures
  - Craniosynostosis needs to be ruled out
- Majority of change in head shape will occur by 12-13 months of age
  - Less significant changes can continue up until age 2
WHY are we here?

- We have identified a knowledge gap in the community
  - “Wait and see” approach
  - Referrals stating incorrect side
- Health care professionals have a great opportunity to help prevent torticollis
- The incidence of torticollis and plagiocephaly has increased dramatically in recent years

WHY this dramatic rise?

- Since launch of the back to sleep campaign (1992), the frequency of posterior plagiocephaly has increased (Pogliani et al 2011)
- The “tummy to play” message seems to have been lost
- Development of plagiocephaly predisposes the infant to the development of torticollis

The cycle of torticollis and plagiocephaly

Torticollis $\rightarrow$ head turning preference

Plagiocephaly progresses $\rightarrow$ Plagiocephaly begins to develop

Torticollis progresses

WHO is most at risk?

- Multiple risk factors, including:
  - Body weight
  - Body length
  - Birth trauma
  - Multiple births
  - Male gender
  - Complicated labor

Maternal uterine abnormalities
Breech presentation
Facial asymmetry
Plagiocephaly
Primiparity

Karmel-Ross, 2006

HOW do you play a role in prevention?

- Being familiar with the risk factors
  - Early identification of at-risk infants
- Educating parents re: strategies to prevent plagiocephaly
  - Helps avoid the plagiocephaly $\leftrightarrow$ torticollis cycle

WHEN should we intervene?

- Starting on day 1 of life for prevention, by encouraging prone positioning while awake
  - “Back to sleep, tummy to play”
- In 1 study of 380 healthy neonates, assessed at birth and seven weeks (van Vlimmeren, 2007)
  - Only 9 of 23 children who presented deformational plagiocephaly at birth presented with deformational plagiocephaly present at follow-up
  - 75 other children developed deformational plagiocephaly between birth and follow-up
• Encouraging prone positioning while awake, from birth - “tummy to play”
  • Helps prevent plagiocephaly and promote the acquisition of gross motor skills
  • New Canadian guidelines recommend “Infants (aged less than 1 year) should be physically active several times daily, particularly through interactive floor-based play.” (CSEP, 2012)

Prevention strategies con’t
• Avoid supine positioning aside from crib, car seat
  – Minimize the use of bouncy seats, swings, etc
• Alternate positioning in crib nightly
  – Head at one end one night, and the other end the next
• Alternate positioning at diaper changes

• Refer to Physiotherapy as soon as torticollis is suspected
• It is never too early to be assessed
• Early assessment and intervention
  – Facilitates treatment
  – Allows more time for change to occur (with regard to head shape)
  – Reduces risk of developmental sequelae (eg. gross motor delay)

Accessing PT Services
• A referral to CHEO PT must be received from a family physician or paediatrician
• Referrals indicating torticollis will automatically be triaged into the torticollis class and seen ASAP
  – Babies older than 9 months are seen individually rather than in the class format

• Babies do NOT need to be seen by Neurosurgery’s Plagiocephaly Clinic first
• A new patient class is held weekly, either on Tuesday morning or Wednesday afternoon

There is currently NO waitlist!!!
What if my patients live outside of the Ottawa area?

- Follow-up visits occur every 3 – 8 weeks, depending on the baby
  - Many families are willing and able to drive longer distances to come to our clinic
- PT resources vary widely among communities
  - Some PTs in private practice are quite comfortable to treat this population while others aren’t

Other Resources

- Parent information about torticollis and plagiocephaly can be found on CHEO’s website at:
  http://www.cheo.on.ca/en/torticollis

Torticollis Program at CHEO

- Group setting for assessment and follow-up visits
- Ratio of 2 PTs : 6 babies for assessment and 2 PTs : 4 babies for follow-up
- Assessment class includes education session and individual evaluation
- Focus on thorough understanding of the problem and of the home program

Torticollis at CHEO con’t

- Treatment targets strengthening weak muscles, stretching tight muscles, and promoting gross motor development
- Head shape is also evaluated at each visit
- Follow-up until the baby meets two criteria:
  - Torticollis is resolved
  - Sitting independently

Treatment Strategies

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Positioning

- Look around the house for hidden “traps” that encourage baby to look to their preferred side
- Provide stimulation to the opposite side
  - Need to control opposite shoulder to ensure neck rotation and not trunk rotation
Strengthening

- Takes advantage of babies’ head righting reflex
  - Emerges at 2-3 months of age
  - Response is to right the head on the body

Strengthening Strategies

- Carrying techniques
- Picking baby up
- Wedging

Stretching

- Focus on SCM but may need to stretch other soft tissues
- Do not allow for compensations
- Slow and sustained
- Multiple times a day
- Opposite to the preference

NB: Only 10-20% require stretching. 100% require strengthening.

Tummy Time

- As discussed in context of prevention
- Many babies dislike it — perhaps even more so in babies with torticollis
- Continue to provide stimulation on their non-preferred side
- Parent education/encouragement often required
  - Knowing their babies cries
  - Do not pick up at the first tear

Key Points

- Look for risk factors
- Early intervention is best
- Educate parents to prevent the development of torticollis and plagiocephaly...

TUMMY TIME!!!

References


Pogliani L; Mameli C; Fabiano V; Zuccotti GV. Positional Plagiocephaly: what the pediatrician needs to know. Childs Nerv Syst, 2011. 27:1867-1876.


Questions?