

# Drooling

### Pr Marie-Cécile Manière







for rare or low prevalence complex diseases

O Network

Craniofacial anomalies and ear, nose and throat disorders (ERN CRANIO)

Member

Hôpitaux Universitaires de Strasbourg — France



Sialorrhea (hypersalivation)

= excessive saliva flo



<u>Anterior</u> (Drooling) = when patients have excessive anterior or forward spillage of saliva from their mouths. <u>Posterior</u> = when patients have excessive posterior spillage of saliva from their mouths down their airways (tracheas) rather than being swallowed normally.

## Prevalence

- Drooling is common in many neurological diseases, congenital abnormalities of brain, and various genetic syndromes.
- In a Swedish survey of 979 individuals with different disabilities, 346 had drooling of which 123 profuse or very profuse drooling.
- Drooling prevalence is estimated of 44.0% in persons with cerebral palsy (CP).
- Sometimes drooling is related to an irritating lesion, such as dental caries or throat infection, resulting in increased production of saliva.
- Severe drooling may get worse with some antiepileptic drugs, such as clonazepam, leading to aspiration syndrome, skin irritation, and articulation difficulties.

## Causes of drooling

Drooling of saliva in patients with disability is generally <u>not</u> due to excessive production of saliva but appears to be caused by lack of awareness of external salivary loss, oral motor dysfunction, dysphagia and intraoral sensitivity disorder (absent or impaired oropharyngeal sensation).

(The process of swallowing is highly complex and involves many muscles in the oral cavity, larynx, and oesophagus; more than 30 nerves and muscles are involved in volitional and reflexive activities during eating and swallowing).

## Drooling is often due to a combination of these factors



Poor neck stability Impaired head and/or trunk control



Poor lip closure Abnormal tone of tongue and lips



Malocclusion : open mouth posture

# **Consequences of drooling**

• Medical:

 $\rightarrow$  inhaling saliva into the lungs, which can cause pneumonia

→ loss of water and electrolytes (high percentage of saliva is lost), risk of dehydration

 $\rightarrow$  irritation and excoriation of the skin around the mouth or chin, favors infections and gives rise to speech or eating disorders.

- Chronic wet clothing, wet bedding
- Drooling is not socially accepted and can produce significant negative effects on the psychosocial health and quality of life.



Child with CP, profuse drooling, obliged to change his scarf 2 times by hour

## **Drooling assessment**

- The objective is to determine which of the **causing factors** may be contributory
- Questions asked about:
  - Type of deficiency
  - General health
  - Medications
  - Dental history
  - Eating and drinking (a poor saliva control is often accompanied by problems with chewing and swallowing)
  - Communication abilities (children with severe oral motor difficulties often do not have oral speech)

- Measuring drooling severity and frequency:
- 1. Severity:
  - > Dry
  - Mild wet lips
  - Moderate wet lips and chin
  - Severe clothing damp
  - Profuse clothing, hands and objects wet
- 2. Frequency
  - > Never
  - Occasionnaly
  - > Frequently
  - Constantly
- Specific scales have been developped (« Drooling Impact Scale », Royal Children Hospital of Melbourne)

## The **Drooling Impact Scale**: a measure of the impact of drooling in children with developmental disabilities



Developmental Medicine & Child Neurology, Volume: 52, Issue: 2, Pages: e23-e28, First published: 15 January 2010, DOI: (10.1111/j.1469-8749.2009.03519.x)

## Management

The management of such patients requires a **multidisciplinary approach**. Several types of therapeutic management are described:

 Physiotherapy : training of sensory awareness and oral motor skills ("myofunctional therapy")

= the most effective treatment that *addresses the cause* of sialorrhea in children with cerebral palsy

= training of sensory awareness and oral motor skills, performed by a speech therapist. Orthodontic treatment, and sometimes orthognatic surgery could be indicated to facilitate lip closure.

#### Drug therapy

- Anticholinergics (e.g. glycopyrrolate and scopolamine) could dry the secretions in some children. Side effects include irritability, sedation, blurred vision, and constipation.

- *Scopolamine* is also available as a dermal patch. These medications should be considered in cases of moderate to severe sialorrhea or respiratory complications.

- *Atropine sulfate* is inexpensive and appears to have good clinical response combined with good safety profile.

- Minimally invasive modalities : botulinum toxin injected directly into the parotid and submandibular glands; may be effective in reducing excessive drooling, and should be considered as adjuvant to speech therapy.
- Surgical management aims to reduce saliva secretion; posterior re-routing of salivary ducts
  - Indicated in case of severe drooling and failure of conservative methods
  - However, it may lead to increased aspiration.
  - Surgery may sometimes result in *xerostomia*, with

increased carious risk



- need to reinforce preventive measures
- regular dental check-ups