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REVIEW ARTICLE

Sialorrhea in children with cerebral palsy☆,☆☆

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KEYWORDS
Sialorrhea;
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Abstract
Objective: To review the literature on sialorrhea in children with cerebral palsy.
Source of data: Non-systematic review using the keywords ''sialorrhea'' and ''child'' carried out in the PubMed®, LILACS®, and SciELO® databases during July 2015. A total of 458 articles were obtained, of which 158 were analyzed as they were associated with sialorrhea in children; 70 had content related to sialorrhea in cerebral palsy or the assessment and treatment of sialorrhea in other neurological disorders, which were also assessed.
Data synthesis: The prevalence of sialorrhea is between 10% and 58% in cerebral palsy and has clinical and social consequences. It is caused by oral motor dysfunction, dysphagia, and intraoral sensitivity disorder. The severity and impact of sialorrhea are assessed through objective or subjective methods. Several types of therapeutic management are described: training of sensory awareness and oral motor skills, drug therapy, botulinum toxin injection, and surgical treatment.
Conclusions: The most effective treatment that addresses the cause of sialorrhea in children with cerebral palsy is training of sensory awareness and oral motor skills, performed by a speech therapist. Botulinum toxin injection and the use of anticholinergics have a transient effect and are adjuvant to speech therapy; they 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. The use of trihexyphenidyl for the treatment of sialorrhea can be considered in dyskinetic forms of cerebral palsy or in selected cases.

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PALAVRAS-CHAVE
Sialorreia;
Paralisia cerebral;
Criança

Sialorreia em crianças com paralisia cerebral

Resumo

Objetivo: Revisar a literatura referente a sialorreia em crianças com paralisia cerebral.
Fonte de dados: Revisão não sistemática utilizando as palavras-chave ''sialorreia'' e ''criança'' realizada nas bases de dados Pubmed®, Lilacs® e Scielo® em julho de 2015. Foram recuperados 458 artigos, 158 foram analisados por terem relação com sialorreia em crianças, 70 com conteúdo relativo à sialorreia na paralisia cerebral ou a avaliação e tratamento da sialorreia em outros distúrbios neurológicos foram aproveitados.
Síntese dos dados: A sialorreia tem prevalência entre 10% e 58% na paralisia cerebral e implica em consequências clínicas e sociais. É causada por disfunção motora oral, disfagia e distúrbio da sensibilidade intraoral. A gravidade e o impacto da sialorreia são avaliados através de métodos objetivos ou subjetivos. Estão descritas diversas formas de manejo terapêutico: treino para consciência sensorial e habilidades motoras orais, terapia farmacológica, injeção de toxina botulínica e tratamento cirúrgico.
Conclusões: O tratamento mais eficaz e que aborda a causa da sialorreia nas crianças com paralisia cerebral é o treino para consciência sensorial e habilidades motoras orais, realizado por um fonoaudiólogo. Injeção de toxina botulínica e o uso de anticolinérgicos têm efeito transitório e são auxiliares ao tratamento fonoaudiológico ou devem ser consideradas nos casos de sialorreia moderada a grave ou com complicações respiratórias. O sulfato de atropina tem baixo custo e parece ter boa resposta clínica com bom perfil de segurança. O uso de triexifenidil para o tratamento da sialorreia pode ser considerado nas formas discinéticas de paralisia cerebral ou em casos selecionados.

Introduction

Sialorrhea is the involuntary loss of saliva and oral content[1,2] that usually occurs in infants; however, at 24 months of age children with typical development should have the ability to perform most activities without loss of saliva.[3] After the age of 4 years, sialorrhea is abnormal and often persists in children with neurological disorders, including neuromuscular incoordination of swallowing and intellectual disabilities.[1] The term cerebral palsy (CP) describes a group of movement and posture development disorders, with activity restrictions or motor disabilities caused by malformations or injuries that occur in the developing fetal or child's brain.[4,5] Worldwide, the prevalence of CP is 1–5 per 1000 live births, representing the most common cause of motor disability in children.[6] The prevalence of sialorrhea in CP is seldom studied, and the results cannot be compared due to variation in the study designs and patient selection.[1] Some authors reported a prevalence of 10–58%,[7–10] thus it is reasonable to accept that one in three patients with CP has drooling at some degree.[1]

Although underestimated, sialorrhea implies clinical and social consequences and has several impacts related to the overall health of children with CP, regarding dysphagia and respiratory health, their socio-emotional development, and emotional and work overload for families and caregivers.

This non-systematic review aims to update the professionals involved in the care of children with CP in relation to the literature on sialorrhea in these patients; it was carried out using the keywords ''sialorrhea'' and ''child'' in the PubMed®, LILACS®, and SciELO® databases during July 2015. A total of 458 articles were retrieved, of which 158 were analyzed, as they were associated with sialorrhea in children; 70 were related to sialorrhea in cerebral palsy or the assessment and treatment of sialorrhea in other neurological disorders, which were also assessed.

Physiology of salivation

The parotid glands produce more serous, watery saliva as a result of stimulation during meals. The sublingual and submandibular glands produce more viscous saliva, more constantly, throughout the day.[11,12] On average, a person swallows approximately 600 mL of saliva every day; however, in some individuals, this volume can reach up to 1000 mL/day.[11] Afferents of the fifth, seventh, ninth, and tenth cranial nerves reach the solitary tract and salivatory nuclei in the medulla. The parasympathetic stimulation reaches the submandibular salivary glands through the seventh cranial nerve and the parotid through the ninth nerve.

The preganglionic sympathetic fibers originate at the lateral intermediate column of the first and second thoracic segments and connect with the postganglionic fibers in the upper cervical sympathetic ganglion. These postganglionic sympathetic fibers reach the salivary glands passing through the section along the external carotid artery. Salivary secretion is regulated indirectly by the hypothalamus-solitary circuit and by effects directly modulated by tactile, mechanical, and gustatory reflexes. It is questionable whether an interruption can occur in this