

Profuse Sialorrhea in an Elderly Woman: A Therapeutic Challenge!

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Abstract

Sialorrhea is encountered more often because of the increasing population and common morbidities in older adults. Considering inappropriate medications in older adults as per 2023 beer criteria, treatment with anticholinergic medications is challenging. Other options available and possible to manage sialorrhea are discussed. Multidisciplinary approach is preferred in patients with multi-morbidities and multifactorial etiology of sialorrhea.

Keywords: Sialorrhea; Older Adults; Elderly; Anticholinergic Medications; Parkinsonism; Botulinum Toxin

Introduction

Sialorrhea or ptyalism is an overabundance of saliva. It can be due to a multitude of causes. In older adults, the most common cause of sialorrhea is poor neuromuscular control of the lips, tongue, and perioral soft tissues. However, other causes include drugs (mercury, copper, carbidopa-levodopa), stomatitis (aphthous/septic ulcers, periodontal disease, chemical burns), specific oral infections (diphtheria, syphilis, tuberculosis), single oral lesions (alveolar abscess, salivary calculus), and reflex salivation (gastric dilation, gastric ulcer/carcinoma, pancreatitis) [1].

In older adults, sialorrhea is typically seen in Parkinson's disease (70-80%), amyotrophic lateral sclerosis (ALS), or in patients who have had a stroke [2]. Sialorrhea can also be due to excess salivation or problems removing salivary flow [3]. It was previously hypothesized that sialorrhea was due to autonomic dysfunction resulting in excess salivation, however, sialometry studies revealed that salivary production is decreased in Parkinson's disease, when compared to other pathologies. In both cases, excess saliva that leads to drooling results in skin irritation, angular stomatitis, depression, social isolation, foul odor, and aspiration pneumonia [3].

In children and young adults, mainstay of the treatment are anticholinergic medications, however, in older person anticholinergic medications are inappropriate (American

Geriatric Society 2023 Beer criteria). With changing demographics and increasing life expectancy, the older population is increasing. Older adults have multi-morbidities including cognitive decline and frailty. Therefore, clinicians are expected to encounter more patients with sialorrhea and face more challenging situations.

Case Presentation

86-year-old African- American woman came to the geriatric practice for routine follow up. She was very nonadherent to follow up. She was noticed to have profuse salivation and she was holding a large container in her hand. As per family member, this was going on for more than a month. Her past medical history included hypertension, Diabetes Mellitus, type 2 on dietary control, chronic granulomatous disease diagnosed 10 years ago and mild cognitive impairment. She also had occasional Gastroesophageal reflux disease symptoms for which she took tums with significant relief.

She denied any stroke in the past. The patient was not taking any medications. Her gait is slow and needed wheelchair use for doctor's visits. As per her daughter, she had at least 5-6 cups of saliva collected during the daytime. She denied any difficulty in swallowing, but the amount was decreasing progressively. There was a slight decrease in weight (2 pounds) since my last visit 6 months ago. Daughter was concerned about what could be done for decreasing her mother's salivation because it is affecting her mother's quality of life. Patient was refusing to go to any other

specialist and refused any major interventions. On questioning, there were slight dental problems. No gross abnormality was noticed on examination of mouth.

Patient was alert, oriented to time, place and people, she had no tremors or rigidity. There was no neurological deficit. My cognitive status was unchanged from my previous visit. This is not an unusual situation in oldest old geriatric patients. Patient refused any work up. Many symptoms could be multifactorial. The exact reason for profuse salivation was unclear. Profuse salivation may be caused by GERD (Water brash) or dental issues. The patient had no evidence of parkinsonism. There was no focal neurological deficit. Although, our patient refused work up, we judiciously planned trial of over-the-counter local gargles containing diphenhydramine and lidocaine. Patients were monitored closely by their family members for any side effects. Patient was also referred to the dentist for any possible interventions. She started on proton pump inhibitors for GERD.

Discussion

Evaluating and treating sialorrhea involves taking a detailed history from the patient, caregivers, and taking several diagnostic steps. The best way to evaluate and treat sialorrhea is by involving different specialties in a multidisciplinary approach [4]. The level of activity, orofacial motor skills, positioning, and emotional state of the patient should be assessed. Caregivers should provide information on the patient's medications, medical history, and communication and linguistic abilities [4]. Medical assessment should focus on respiratory status, lower airway, neurological, esophageal, motor, and orofacial examinations/assessments. Hydration status and any presence of allergies should also be assessed.

Drooling is quantified using various scales, the scales are used to evaluate response to interventions over time. The use of MRI diagnostic imaging can help assess possible suspected causes for sialorrhea, associated with cranial nerve involvement [4]. Patients with suspected upper esophagus etiology should undergo barium swallow with video fluoroscopy testing performed by a speech language pathologist and radiologist. In addition, patients who have a suspected aspiration should also undergo modified barium swallow evaluation and fiberoptic endoscopic evaluation of swallowing (FEES) [4].

The preferred first step in management of sialorrhea is conservative non-pharmacological management. Conservative management for sialorrhea includes speech language therapists, dentists, and physiotherapists (Isaacson, 2020). Orthodontic procedures are the treatment modality of choice for patients with misaligned dentition. Palatal stimulation plates with wire attachment to the posterior portion of the mouth cause stimulation of the soft palate and have been proven to be of benefit to patients with jaw misalignment. The idea behind orthodontic procedures is to improve tongue positioning and closure of the mouth, resulting in less hypersalivation [4].

Behavioral strategies are also utilized in the treatment of patients with mild-moderate neurological dysfunction and sialorrhea. In this strategy the patient associates swallowing or cleaning the face with a cue; this strategy is reinforced through the use of positive and negative reinforcement [2]. Pharmacological treatment for sialorrhea has often been the mainstay of treatment, however, pharmacological treatment provides minimal relief of symptoms and is generally unsafe for use in elderly patients. In addition, pharmacological treatments for sialorrhea are not FDA-approved, and are oftentimes used off-label. As such, pharmacological treatment is costly.

Perhaps the most popular used pharmacological treatments are anticholinergic agents, glycopyrrolate and scopolamine, as they inhibit salivary secretion, by blocking the parasympathetic innervation of the salivary glands [2]. Unfortunately, these medications have significant adverse effects such as excessive drying, urinary retention, blurred vision, and behavioral disturbances (Delirium) [5]. Transdermal scopolamine patches are better tolerated for short term use; however, side effects include urinary retention and blurred vision. The adverse side effects and cost of anticholinergics make patient compliance difficult.

Recent studies have favored botulinum toxin. Under US guidance, botulinum toxin type A was used and injected into the parotids and submandibular glands of ten patients. The results demonstrated improvement and no complications in nine out of the ten patients. The treatment lasted approximately 5 months, before repeated treatment was warranted [2]. Surgical management is preserved for patients with persistent drooling, who did not respond to conservative and pharmacological management. Surgical management includes denervation of the salivary glands via the middle ear in the location where the tympanic plexus and chorda tympani travel before entering the major salivary glands [2].

The procedure is performed quickly and without the use of general anesthesia. Side effects of the surgery include loss of taste, which is transient and returns in 6-18 months. Definitive surgical management includes duct ligation or rerouting the major salivary ducts [5]. The most successful surgical management involves the ligation of the bilateral parotid ducts and submandibular gland excision. The surgery results in nearly total improvement of sialorrhea, and mild facial weakness. Although this procedure is invasive, it can be considered in patients with severe sialorrhea at risk for aspiration. Old age and multi-morbidities including cognitive decline are added risks in outcome.

Radiation therapy is a treatment option for patients who are elderly and who are not surgical candidates. Malignancy secondary to radiation therapy occurs 10-15 years after exposure, and therefore benefits patients who are elderly or debilitated. Exposure to radiation produces xerostomia that ranges from months-years. Overall, sialorrhea can be very debilitating and

poses a risk for recurrent infections secondary to recurrent aspirations, skin irritation, isolation, and low self-esteem. Evaluation and management of sialorrhea is multifactorial. Treatment needs to be catered to the specific needs challenging each individual patient. Providers should be aware of the various treatment options available to help improve the lives of patients and assess which benefits the patient's individual needs [6-8].

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