

Cervicogenic dysphagia associated with cervical spondylosis: A case report and brief review

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ABSTRACT

Dysphagia (swallowing difficulty) is most often related to another health problems, including brain or spinal cord injury, neurological damage, neuromuscular disorders, and anatomical conditions. Dysphagia can have detrimental effects on pulmonary health and also impact nutritional intake. The right treatment depends on the cause established. Cervicogenic dysphagia is a cervical cause of difficulty in swallowing. This report describes a 53-year-old female patient with sore throat, swallowing difficulty for solids, and acid reflux for 2 years. Radiographs revealed anterior osteophytic lipping and kyphosis of the cervical spine and thoracolumbar (right convex) scoliosis. After 6 months of chiropractic treatment, her complaints and spinal deformity were obviously resolved. Our case report is unique in that the patient had an unusual presentation, i.e. cervical osteophytes, cervical kyphosis, and thoracolumbar scoliosis, which are all contributable causes of dysphagia. Correction of spinal deformity could result in positive treatment outcomes in selected patients with symptoms of cervicogenic dysphagia.

Keywords: Cervical kyphosis, Cervical osteophyte, cervicogenic dysphagia, chiropractic, scoliosis

Introduction

The prevalence of dysphagia is about 3% in the general population^[1] and as high as 22% in individuals over the age of 50.^[2] Dysphagia can be a sign of another conditions or neglected medical issues. Cervicogenic dysphagia is a cervical cause of difficulty in swallowing.^[3] Cervical spine/neck disorders which can cause dysphagia include vertebral degeneration (cervical facet syndrome, anterior osteophytes, disc herniation, idiopathic skeletal hyperostosis), spinal deformities (scoliosis, kyphosis, hyperlordosis, congenital anomalies), inflammatory diseases (rheumatic arthritis, osteoarthritis), and injuries (traumatic, postsurgical).^[3-5] The symptoms of cervicogenic dysphagia are basically caused by either mechanical obstruction or neuromuscular motility dysfunction,

although both causes are not mutually exclusive. Treatment usually depends on the underlying cause and type of dysphagia. Osteophytes of the anterior cervical spine are an established cause of dysphagia. The most likely mechanism of dysphagia is interference with swallowing at the pharyngoesophageal junction, although osteophytes in the lower cervical spine may also interfere with esophageal peristalsis.^[6] Postural modification may help treat swallowing disorders due to cervical osteophytes.^[1] Many cases can be improved with conservative management, but a cure is not always possible.^[7] This case report has been prepared after obtaining written informed consent from the patient to have the case details and accompanying images published. Owing to the nature of the retrospective chart review, IRB approval is not required.

Case Report

A 53-year-old female complained of gradually increasing sore throat and squeezing sensation while swallowing solids for 2 years. She first experienced stiffness and pain in the neck when

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waking up in bed. The pain was located at the posterior neck and between the shoulder blades and would travel to the sides of the neck and to the throat. She had occasional acid reflux and a feeling of food stuck in the throat. Symptoms worsened as using of mobile phone or reading in bed with the head bent downward and not moving. Subsequently, cervical spine radiography showed evidence of degenerative spondylosis. Over the past couple of months, the patient received antacids, antiinflammatory medications, diet modification, and swallowing exercise. Due to an insufficient response to her treatment, a chiropractic outcome was then sought.

On examination, it was found that the patient had a straightened neck with a hump at the neck base. Cervical range of motion was restricted at 30° passive extension (normal >60°) and 45° bilateral rotation (normal >80°). The intensity of neck pain was rated as 5/10 on an 11-point numeric rating scale. Bilateral sternocleidomastoid, pectoralis major and minor, scalenes, quadratus lumborum, and mid-back paraspinal muscles were moderately hypertonic. The spinal motions of C1/2, C5/6, C7/T1, T1/2, and thoracolumbar segments were restricted. Radiographs revealed anterior osteophytes extending from C6 and C7 with a reversed cervical lordosis and thoracolumbar dextroscoliosis [Figures 1a and 2a]. With the exclusion of otorhinolaryngological, dental, neurologic, and psychogenic conditions, she was given a diagnosis of cervicogenic dysphagia associated with cervical spondylosis.

Chiropractic remedy consisted of spinal adjustment of the cervical and thoracolumbar segments along with thermal ultrasound therapy to release spinal stiffness and restore motion. Treatment sessions were applied three times a week for 3 months. Subsequently, an intermittent lower cervical traction (Robomax Series, WIZ Medical, Korea) to decompress neural impaction was applied additionally. Treatment frequency was reduced to two times a week for further 3 months. She reported that her symptoms had been ameliorated over the course gradually from the second week and mostly resolved by the end of 6 months.

The patient continued to enter maintenance treatment with focus on the improvement of head posture and spinal misalignment on a monthly basis for the next 2 months. At the eighth month follow-up, repeat EOS® radiographs [Figures 1b and 2b] revealed improvement of her cervical curvature, thoracolumbar scoliosis, and other postural parameters. She reported symptom free and was able to return to normal diets without sore-throat sensation.

Discussion

Anterior cervical osteophytes are common and generally asymptomatic. In unusual cases, they can lead to dysphagia, odynophagia (painful swallowing), dysphonia, and dyspnea.^[8,9] Large (>10 mm in sagittal diameter) anterior osteophytes do cause dysphagia by direct compression of the pharynx and esophagus. Smaller osteophytes may cause blockage if they impinge on the pharyngoesophageal segment where it is fixed to the cricoid cartilage, usually at the lower cervical levels.^[10] The proposed mechanical irritation of osteophytes can cause cricopharyngeal spasm, inflammation, and resultant fibrosis around the esophagus. Deformation of the piriform recesses and disturbances of epiglottis tilt by nearby osteophytes are also included in the variety of causalities.^[11,12] Odynophagia may result from mucosal abrasion or hypopharyngeal ulceration at a point of pressure between the posterior cricoid cartilage and a protruding osteophyte.^[13] Dysphonia or airway obstruction may result from laryngeal edema, arytenoids ankylosis or vocal cord paralysis caused by an osteophyte at the cricoid level.^[14]

It has been found that unoptimized cervical alignment is related to the incidence of dysphagia.^[13,15] A retrospective analysis of data from video fluoroscopic swallow studies of 36 patients with cervical kyphosis confirmed the association between cervical kyphosis and altered pharyngeal structure and swallowing dysfunction.^[16] The study revealed that patients with cervical kyphosis have a significantly dilated

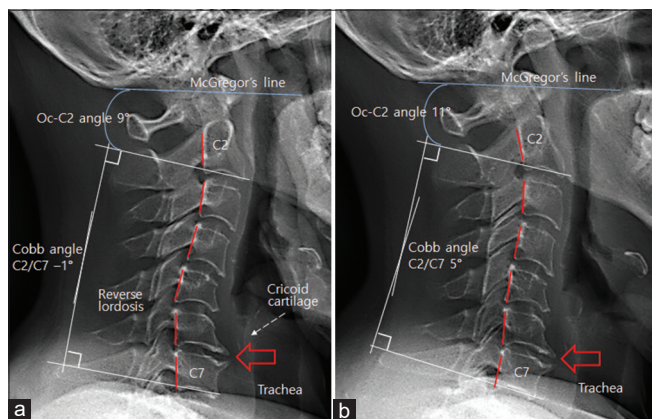


Figure 1: Sagittal cervical radiographs. (a) Initial radiograph showed reverse lordosis, anterior osteophytes extending from C6 and C7 (arrow). Cobb angle was -1°. (b) At the 8-month follow-up visit, the cervical curvature improved as compared with initial radiograph

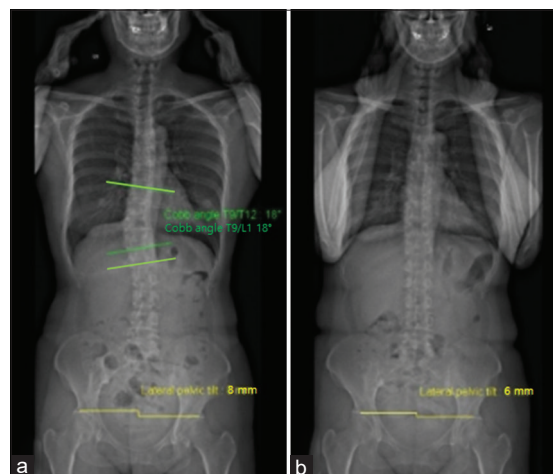


Figure 2: Standing full spine coronal images. (a) Dextroconvexity of the thoracolumbar curve was seen with a Cobb angle (T9-L1) of 18°. The right acetabulum was about 8 mm more superior to the left. (b) Repeat radiograph after chiropractic care showed a normalization of the thoracolumbar curvature

pharynx, elongated hypopharyngeal transit time, and worsened penetration–aspiration scores (the depth to which food passes in the airway).^[16] Other retrospective studies^[17,18] in patients treated with an external immobilization of the cervical spine (wearing a Halo-vest) showed significant association with the incidence of dysphagia, ranging from 32 to 66%. Miyagi *et al.*^[18] observed that both smaller occiput–C2 (Oc–C2) angle and longer cervical immobilization were associated with the severity of dysphagia. The inadequate extension at Oc–C2 angle may contribute to the impact on the oropharyngeal space and swallowing difficulties in patients with halo-vest immobilization as well as normal individuals.^[19]

In a retrospective analysis of videofluoroscopic swallow study, barium coating on the pharyngeal wall was observed more frequently in the cervical kyphosis group ($n = 27$) vs. control ($n = 24$). The primary cause of cervical kyphosis-related pharyngeal dysfunctions is thought to be weakening of the deep cervical flexors (DCFs).^[20] A review article on dysphagia related to cervical and postural disorders suggested that weakening of the DCFs (longus colli and longus capitis) could cause problems in the swallowing process.^[13] In particular, the longus colli muscle stabilizes the cervical spine during talking, coughing, and swallowing, and weakening of this muscle reduces stability during swallowing.^[20] Abnormal muscle function and poor neck posture can adversely disturb the sphincteric action of the larynx and cricopharyngeus (upper esophageal sphincter).^[1] Moreover, sarcopenia (the loss of muscle mass) due to natural aging process is considered as an independent risk factor for dysphagia in older individuals.^[21]

Gastroesophageal reflux disease (GERD) is a frequent cause of dysphagia.^[22] Approximately two-thirds of patients with long-term and severe reflux symptoms also have dysphagia symptoms. Based on a randomized, population-based study of 500 German residents, dysphagia was significantly increased in the reflux group (28%) versus the normal group (3%).^[22] Once reflux occurs, the distension of the esophagus activates the stretch receptors in the esophageal wall and induces secondary peristalsis to force the refluxed bolus back to the stomach.^[23] Refluxed irritants from the stomach may cause throat irritation, damage to esophageal lining and can lead to scarring and narrowing of the lower esophagus, leading to trouble swallowing. A prospective study observed that scoliosis is a risk factor for GERD symptoms. A left convex scoliosis with Cobb angle $>30^\circ$ is associated more strongly with GERD.^[24] Kyphosis and scoliosis promote gastroesophageal reflux because of bringing pressure to the stomach while reducing the vital capacity required for coughing and disrupting respiratory coordination.^[25] Correction of spinal deformity could result in better treatment outcomes in patients with GERD symptoms.^[26]

It is known that individuals with swallowing disorders have higher rates of mortality and morbidity. The causes of dysphagia vary, and the right treatment depends on the cause established. Improving spinal curvature may help

in relieving GERD symptoms^[26] and swallowing difficulty due to cervical spondylosis.^[1] Using the current case as an example, appropriate intervention, includes physical therapy, chiropractic care, and cervical traction, not only puts the head in a better position but also diminishes pressure on the spinal and pharyngeal structures. Supportive regimen for addressing dysphagia includes diet modification and nonsteroidal antiinflammatory and muscle relaxant medications. Osteophyctomy is generally reserved for those who failed conservative managements.^[8]

Conclusion

Primary care physicians encounter daily challenges to most patients with a broad range of complaints. Recognizing some unusual dysphagia, either primary or secondary, may be a challenge. Degenerative cervical spondylosis is also a contributing factor for patients who are suffering from dysphagia. The current case report illustrates cooperation between manual therapy and primary care, which is important in order to make healthcare more efficient.

Key points

1. Cervical spondylosis can be one of the causes of swallowing disorders.
2. Cervicogenic dysphagia is usually caused by mechanic effects.
3. The causes of dysphagia vary, and treatment depends on the cause established.
4. Postural modification may help treat dysphagia due to cervical dysfunctions.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Ethical approval

This retrospective chart review was exempted from the ethics committee/IRB approval.

Declaration of patient consent

A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Conflicts of interest

There are no conflicts of interest.

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