



Dysphagia as a symptom of anterior cervical hyperostosis – Case report

Robert Węglowski^{1,A-B,E-F}, Piotr Piech^{2,B-D}

¹ University of Physical Education in Warsaw, branch in Biała Podlaska, Poland

² Department of Human Anatomy, Medical University, Lublin, Poland

A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of article

Węglowski R, Piech P. Dysphagia as a symptom of anterior cervical hyperostosis – Case report. *Ann Agric Environ Med.* 2020; 27(2): 314–316. doi: 10.26444/aaem/106115

Abstract

Degenerative lesions with hyperostosis on the anterior surface of cervical spine are common in clinical practice. In addition to pain being an effect of spinal dysfunction, they sometimes cause difficulties in swallowing or speaking as well as breathing disorders. A 52-year-old farmer with 4-year history of gradually intensifying dysphagia was admitted to hospital due to inability to intake a solid food, significant weight loss, and because of the appearance of a new symptom – dysphonia. Previous conservative treatment for swallow difficulties was ineffective. CT revealed a bone excrescence on the anterior surface of two cervical vertebrae which caused an oesophageal obstruction and compression of the vocal folds. Structural abnormalities of cervical spine should be considered in differential diagnosis of symptoms from the oesophagus and upper respiratory tract, especially when a first-line conservative treatment is not effective. In these cases, surgical removal of the osteophyte is an effective way of treatment.

Key words

dysphagia, anterior cervical hyperostosis, dysphonia, cervical osteophyte

INTRODUCTION

A hyperostosis on the anterior surface of cervical spine is a relatively frequent occurrence. It may be a manifestation of diffuse idiopathic skeletal hyperostosis (DISH), degenerative changes, as well as cervical discopathy; bone excrescence also could appear as a result of an injury or cervical spine infection [1]. It commonly causes pain, limitations in the range of movements of the cervical spine, radiculopathies, and more serious neurological symptoms. Ailments caused by direct compression on nearby anatomical structures (e.g. trachea, oesophagus) occur relatively less frequently [1, 2, 3].

CASE REPORT

A male patient, a 52-year-old farmer, was hospitalized due to a 4-year history of gradually progressive difficulties with swallowing. At 20 years of age he suffered a serious injury of the cervical spine as the result of a fall from a tractor during harvest. An imaging examination performed directly after the injury did not reveal any abnormal lesions in the head and neck area. Post-traumatic pain of the spine subsided after 8 months of conservative treatment.

Initially, problems with swallowing were not intensified very much and occurred only transiently after consumption of solid food. The patient reported that in that time he had to drink much more while eating than usual. Based only on the aforementioned symptoms, a general practitioner (GP) decided to start a pharmacological treatment with oral prokinetic medicaments and a proton-pump inhibitor. Initially, the treatment reduced dysphagia; however, since

2016, swallowing difficulties and odynophagia started gradually increasing. Moreover, a new sign – dysphonia – appeared. The patient immediately reported to the GP referred him referred to an otorhinolaryngologist. In ear, nose and throat examination (ENT), no organic cause of dysphonia was found. In this situation, the previous pharmacological treatment was intensified: dopamine D2-receptor antagonist (*Itopride*) 3x25mg/day and proton-pump inhibitor (*Pantoprazole*) 1x40mg/day were prescribed. Unfortunately, despite the intensified treatment, the patient's condition deteriorated considerably. In 2017, the ailments increased to such an extent that the patient could take only semi-solid or liquid food; during this time he lost 7kg.

Re-examination performed by otorhinolaryngologist showed that the vocal folds are deformed probably by an extralaryngeal structure. A computed tomography of the head and neck area revealed advanced degenerative lesions of the cervical spine, with a large bone excrescence on the anterior surface of C3 and C4 vertebrae (Fig. 1, Fig. 2). The largest sagittal dimension of the lesion was 17mm. A real-time, barium swallow X-ray examination of the oesophagus was performed. The examination showed difficult passage of contrast caused by modeling of oesophagus by retropharyngeal bone osteophyte (Fig. 3). The patient was subsequently referred to an orthopaedist. At the beginning of 2017, bone excrescence removal surgery was performed (Fig. 4). After the surgery, problems with swallowing and dysphonia subsided, and one week later the patient was able to consume any type of food.

DISCUSSION

Osteophytes on the anterior surface of cervical spine occur relatively frequently. They develop as an effect of calcification and ossification of connective tissue, mostly within the anterior

Address for correspondence: Piotr Piech, Department of Human Anatomy, Medical University of Lublin, Poland
E-mail: ppiotr.md@gmail.com

Received: 03.03.2019; accepted: 01.04.2019; first published: 08.04.2019



Figure 1. Anterior cervical hyperostosis on CT scan

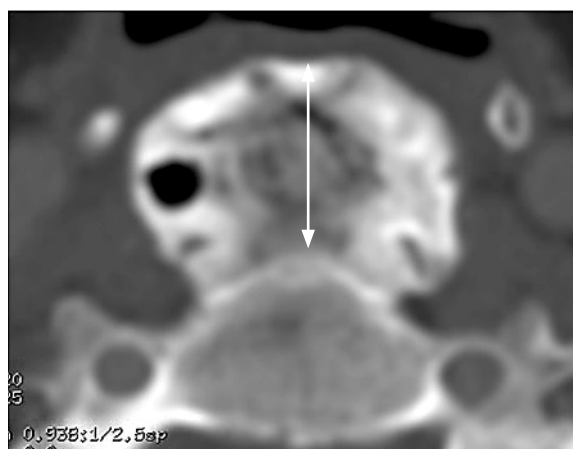


Figure 2. C3 vertebra with anterior hyperostosis (sagittal dimension: 17 mm)

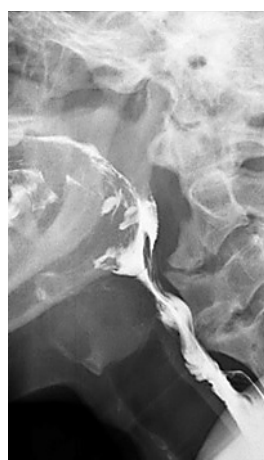


Figure 3. Barium swallow lateral X-ray of oesophagus

longitudinal ligament, which is characteristic for diffuse idiopathic skeletal hyperostosis (DISH), described for the very first time by Forestier and Rotes-Querol in 1950 [4, 5]. The bone excrescence could also appear as the result of an injury, cervical spine infection, ankylosing spondylitis, as well as



Figure 4. Postoperative lateral X-ray of cervical spine

osteoarthritis [1, 2, 3]. The most common symptoms are pain, radiculopathies, neurological disorders, dizziness and headache. Dysphagia, dyspnea and dysarthria occur in less than 1/3 of described cases, and the mechanism of their occurrence is not clearly understood [2, 3, 6, 7]. However, there are some hypotheses which attempt to explain their pathogenesis [8, 9, 10]:

1. Mechanical obstruction of the oesophagus and upper respiratory tract, caused by compression and deformation due to enlarged bone structure.
2. Substantial limitation of mobility due to localization of bone excrescence development at the level where the oesophagus is anatomically attached to cricoid cartilage or diaphragm.
3. Inflammation, fibrosis and stenosis of soft tissue structures caused by mechanical irritation due to osteophyte.
4. Osteophyte associated permanent or periodic muscle spasm.
5. Retention of food or saliva in piriform sinuses (recesses) distorted by osteophyte.
6. Limited mobility of epiglottis caused by nearby localization of bone excrescence.

Patients experiencing difficulties with swallowing and dysphonia are usually direct to a gastroenterologist or otorhinolaryngologist. At the beginning of a differential diagnosis, a hyperostosis is rarely considered as the potential cause of these symptoms, especially if there is no pain from the cervical spine; only 10.6% of cases of dysphagia are caused by osteophytes [11]. Other causes of dysphagia which should be considered while diagnosing are: neurological diseases (stroke, Parkinson's disease, amyotrophic lateral sclerosis), internist diseases (diffuse systemic sclerosis, diabetes mellitus, oesophageal achalasia, vitamin B12 deficiency related to alcoholism, anorexia or vegetarian diet) or/and mechanical obstruction caused by head and neck cancers, mediastinal masses, Zenker diverticulum, and oesophageal web, as well as oesophageal cancer [12, 13]. In the diagnosis of dysphonia, the medical past of the patient, profession and nicotine use should also be considered – vocal fold nodules, polyps and post-intubation granulomas are commonly associated with disorders of phonation in adults [14]. Many authors pay attention to the long time from the appearance

of symptoms to final diagnosis – Verlaan et al. reported about 500 days of diagnostic process and Lui Jonathan et al. mentioned about 25 months until diagnosis is made [2, 15]. Without a doubt, a multidisciplinary diagnostics accelerates a proper diagnosis and the beginning of treatment. This should include ear, nose and throat examination (ENT), as well as a lateral X-ray of the cervical spine. A computed tomography (CT), magnetic resonance imaging (MRI), and above all, a barium swallow X-ray examination (which obviously is not a first-line examination) could be helpful for making a proper diagnosis [16, 17].

The size of the osteophyte does not correlate with the severity of dysphagia, although it is commonly accepted that bone excrescence bigger than 12mm becomes a symptomatic, but bigger than 10mm increases significantly the risk of aspiration [18, 19]. Gradually increasing dysphagia symptoms worsen the quality of a patient's life, and 8–10% of cases require surgical treatment [15, 20]. Indications for surgical intervention are a lack of improvement after conservative treatment, symptoms intensification with weight loss, as well as the appearance of “red flags” or extraesophageal symptoms (dysphonia, aspiration pneumonia, dyspnea, etc.) [2, 21, 22, 23]. In extreme cases, patients are unable to consume solid food, only semi-solid or liquid. The only way of treatment is surgery involving removal of the osteophyte using an orthopaedic chisel. Many authors pay attention to the possibility of complications, especially oesophageal perforation and injury of the superior and recurrent laryngeal nerve (RNL), as well as the hypoglossal nerve [8, 22].

CONCLUSION

Swallowing disorders (dysphagia, odynophagia), dyspnea or dysphonia are rarely caused by cervical spine disease. However, structural abnormalities of the cervical spine should be considered in differential diagnosis, especially when the symptoms do not subside after first-line treatment. In these cases, surgical treatment is the method of choice.

REFERENCES

- Varsak YK, Eryilmaz MA, Arbag H. Dysphagia and airway obstruction due to large cervical osteophyte in a patient with ankylosing spondylitis. *J Craniofac Surg.* 2014; 25: 1402–1403.
- Verlaan J, Boswijk P, de Ru J, et al. Diffuse idiopathic skeletal hyperostosis of the cervical spine: an under estimated cause of dysphagia and airway obstruction. *Spine J.* 2011; 11: 1058–1067.
- Sebaaly A, Boubez G, Sunna T, et al. Diffuse idiopathic hyperostosis manifesting as dysphagia and bilateral cord paralysis: a case report and literature review. *World Neurosurg.* 2018; 111: 79–85.
- Mader R. Diffuse idiopathic skeletal hyperostosis: time for a change. *J Rheumatol.* 2008; 35: 377–379.
- Forestier J, Rotes-Querol J. Senile ankyloses hyperostosis of the spine. *Ann Rheum Dis.* 1950; 9: 321–330.
- Erdur O, Tasli H, Polat B, et al. Surgical management of dysphagia due to anterior cervical osteophytes. *J Craniofac Surg.* 2017; 28: e80–e84.
- Hirano H, Suzuki H, Sakakibara T, et al. Dysphagia due to hypertrophic cervical osteophytes. *Clin Orthop Relat Res.* 1982; 167: 168–172.
- Egarter AC, Kim ES, Lee DJ, et al. Dysphagia secondary to anterior osteophytes of the cervical spine. *Glob Spine J.* 2015; 5: e78–e83.
- Oppenlander ME, Orringer DA, La Marca F, et al. Dysphagia due to anterior cervical hyperostosis. *Surg Neurol.* 2009; 72: 266–270.
- Mitchinson AG, Yoffey JM. Respiratory displacement of larynx, hyoid bone and tongue. *J Anat.* 1947; 81: 118–120.
- Granville LJ, Musson N, Altman R, et al. Anterior cervical osteophytes as a cause of pharyngeal stage dysphagia. *J Am Geriatr Soc.* 1998; 46: 1003–1007.
- McCaffery RR, Harrison MJ, Tamas LB, et al. Ossification of the anterior longitudinal ligament and Forestier's disease: an analysis of seven cases. *J Neurosurg.* 1995; 83: 13–17.
- Ayhan B, Olmez S, Ozaslan, et al. Dysphagia resolved with vitamin B12 therapy: a case of esophageal parakeratosis. *Endoscopy* 2011; 43: Suppl 2.
- Bertelsen C, Zhou S, Hapner ER, et al. Sociodemographic Characteristics and Treatment Response Among Aging Adults With Voice Disorders in the United States. *JAMA Otolaryngol Head Neck Surg.* 2018; 144(8): 719–726. doi:10.1001/jamaoto.2018.0980
- Lui Jonathan Y, Sayal P, Prezerakos G, et al. The surgical management of dysphagia secondary to diffuse idiopathic skeletal hyperostosis. *Clin Neurol Neurosurg.* 2018; 167: 36–42.
- Miauri F, Stella L, Buonamassa S. Dysphagia and dyspnea due to anterior cervical osteophyte. *Arch Orthop Trauma Surg.* 2002; 122: 245–247.
- Bruna E, Alessandrini M, Angelis E. Gigant cervical hyperostosis of the prevertebral space: presentation of two cases and review of literature. *Acta Otorhinolaryngol Ital.* 1996; 16: 532–536.
- von der Hoch NH, Voelker A, Jarvers JS, et al. Result safter the surgical treatment of anterior cervical hyperostosis causing dysphagia. *Eur Spine J.* 2015; 24: 489–493.
- Miyamoto K, Sugiyama S, Hosoe H, et al. Post surgical recurrence of osteophytes causing dysphagia in patients with diffuse idiopathic skeletal hyperostosis. *Eur Spine J.* 2009; 18: 1652–1658.
- Seidler T, Perez Alvarez E, Wonneberger R, et al. Dysphagia caused by ventral osteophytes of the cervical spine: clinical and radiographic findings. *Eur. Arch Otorhinolaryngol.* 2009; 266: 285–291.
- Hirasawa A, Wakao N, Kamiya M, et al. The prevalence of diffuse idiopathic skeletal hyperostosis in Japan – the first raport of measurement by CT and review of the literature. *J Orthop Sci.* 2016; 21: 287–290.
- Lecerf P, Malard O. How to diagnose and treat symptomatic anterior cervical osteophytes? *Eur Ann Otorhinolaryngol Head Neck Dis* 2010; 127: 111–116.
- Aziz Q, Fass R, Gyawali CP, et al. Functional Esophageal Disorders. *Gastroenterology* 2016; 150(6): 1368–1379.