Tube spacers are simple devices which reduce the amount of medication deposited at the oropharynx from 80 percent to 40 percent. Spacers with holding chambers such as the one used by our patient vary in capacity from 140 ml to 600 ml. Because these spacers allow more time for evaporation of the propellant, particle size becomes smaller, and thus more aerosol is deposited on the smaller airways. It is our contention that albuterol triggered atrial fibrillation in our otherwise healthy young asthmatic subject, principally through the increased dose available by using the spacer device. These episodes of palpitations ceased when the metered-dose inhaler was used without the spacer device, yet the patient was still able to obtain symptomatic relief. Cardiac β-adrenergic receptors are predominantly β1-receptors, but up to 20 percent have been reported to be β2-receptors. This may account for the wide variability in cardiac stimulation. With the increasing use of spacer devices and with improved means of delivering bronchodilators to the endobronchial system, closer observation of cardiac arrhythmias should be undertaken.

CONCLUSION

A healthy 26-year-old man with asthma developed repeated episodes of atrial fibrillations using albuterol via a metered-dose inhaler with a spacer device. No such episodes occurred when the device was discontinued. We postulate that such arrhythmias may result from increased deposition of the sympathimetic drug, albuterol, when used with a spacer device.

REFERENCES

6 Lamb LE, Dermskian G, Sarnoff CA. Significant cardiac arrhythmias induced by common respiratory maneuvers. Am J Cardiol 1998; (Nov):563-71
7 Drug Ther Bull 1976; 14:21-22
8 Newman SP, Pavis D, Garland N. Effects of various inhalation modes on the deposition of radioactive pressurized aerosols. Eur J Respir Dis 1982; 63:(suppl 119):57

Aspiration Pneumonia due to Diffuse Cervical Hyperostosis


Diffuse idiopathic skeletal hyperostosis previously has been reported to cause a number of extraspinal manifestations including dysphagia, respiratory distress, dysphonia and cervical myelopathy. We report a case of cervical DISH so extensive as to interfere with the swallowing mechanism and lead to aspiration. Patients with DISH who have mechanical compression of the posterior pharynx may be at high risk for aspiration.

DISH = diffuse idiopathic skeletal hyperostosis

Senile ankylosing hyperostosis of the spine was first described in 1950 by Forestier and Botes-Querol who reported a series of nine patients with bony outgrowths arising from the anterior aspect of the vertebral bodies and extending upward over the disc spaces. Since extraspinal manifestations are common, and at times extensive, Resnick et al appropriately renamed the condition diffuse idiopathic skeletal hyperostosis (DISH) in 1978 and further clarified the criteria for diagnosis. At that time, he defined the necessary radiologic criteria for diagnosis: (a) flowing calcification and ossification along the anterolateral aspect of at least four contiguous vertebral bodies, (b) relative preservation of intervertebral disc height in the involved area without the presence of degenerative disc disease, and (c) the absence of apophysyal joint bony ankylosis, sacroiliac joint erosion or intraarticular osseous fusion.

The pathogenesis of this condition is not known. The pharyngeal masses formed can be quite extensive and may occasionally be visualized or palpated at the time of the physical examination. Previously reported complications of DISH have included dysphagia, extraspinal manifestations, and occasionally respiratory distress, dysphonia and cervical myelopathy. This is the first reported case of a patient with aspiration pneumonia secondary to DISH.

CASE REPORT

A 75-year-old white woman was transferred to our hospital for the evaluation of aspiration pneumonia. The patient had previously complained of cervical stiffness which began five years prior to admission. Two years prior to admission, she began to have difficulty swallowing liquids and solids. This progressed to the point where she began to choke on her food and then was admitted to a local hospital for fever and cough. She was found to have an aspiration pneumonia and treated with high-dose penicillin. She was then transferred for a surgical procedure.

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Aspiration Pneumonia (Wernick, Sherman, Lesser)

of dysphagia. Girgis et al. suggested that the dysphagia was most likely due to mechanical compression. Lambert et al. reasoned that dysphagia could result from either a small osteophyte compressing an area of relative immobility such as the cricoid cartilage or inflammation in the area of the osteophyte. In our patient, it is likely that the dysphagia was due to mechanical obstruction since findings on lateral cervical spinal films showed a large mass in the C3-C5 area and her clinical history indicated progressive dysphagia. We postulate that the pneumonia on her initial presentation could have been caused by the presence of the osteophytes since the dysphagia was progressive, leading to frank choking of ingested food and then to aspiration. Other complications have been reported by Sidi et al. of respiratory distress due to mechanical compression by the osteophyte on the larynx after the mobile esophagus had been deviated to the right and Gay and Elidan reported dysphonia due to DISH.

The treatment approach is based on the severity of symptoms. Umerah et al. and Deutsch et al. have conservatively treated these patients with nonsteroidal anti-inflammatory agents, muscle relaxants and diet. Surgery is reserved for those who have failed conservative therapy and those who have the most severe symptoms as reported by Kibel and Johnson.

We suggest that patients with DISH who have mechanical compression of the posterior pharynx may be at high risk for aspiration. Such patients should be taught routine aspiration precautions and may require surgical intervention.

REFERENCES

FIGURE 1. Lateral spine film showing flowing anterior calcification from C3 to C7 vertebral bodies.

Past medical history was significant for coronary artery disease with bypass graft surgery five years prior to admission, hypertension and renal stones. She had no allergies and never smoked. There was no notable pulmonary history.

Physical examination prior to surgery revealed an elderly obese white woman in no apparent distress, afibrile, with normal vital signs. The neck examination revealed spasm of the right sternocleidomastoid muscle with the head deviated to the left. The chest examination revealed good breath sounds bilaterally and basilar rales in the area of the right lower lobe. Cardiovascular and abdominal examinations did not disclose any abnormalities, while the neurologic examination was significant for a positive gag reflex bilaterally.

The chest roentgenogram showed a patchy alveolar infiltrate in the right lower lobe. No effusions were noted. Lateral cervical spine films revealed a flowing anterior calcification from the C3 to C7 vertebral bodies which was most prominent along C3 to C5 (Fig 1).

It was decided that removal of the anterior cervical osteophytes would relieve the patient's mechanical dysphagia, tracheal obstruction and cervical stiffness and possibly prevent recurrent aspiration. The patient underwent removal of the anterior cervical osteophytes of C3 to C5. Intubation was difficult but ultimately achieved by fiberoptic laryngoscopy. The osteophytes were removed first in piecemeal fashion and then with a small rosette burr. The area was then gently smoothed with a small nasal rasp. A postoperative x-ray film documented debulking of the osteophytes.

DISCUSSION

The patient's presentation of dysphagia, progressing to frank choking and then aspiration pneumonia is compatible with the progressive growth of osteophytes seen in DISH. We note that DISH is not an obscure condition—Resnick and Niwayama reported a 12 percent incidence in 215 routine autopsies. Several complications of DISH have been extensively reported in the literature. Evitar and Harel reviewed all reported cases in which the patient complained