Swallowing Induced Supraventricular Ectopies in a Patient with Straight Back Syndrome


SUMMARY
A 45 year old man presented with the complaint of palpitations on swallowing. Clinical and radiological examination showed features of straight back syndrome and pectus excavatum. Electrocardiogram revealed supraventricular ectopics each time the patient swallowed. This illustrates a unique case of swallowing-related rhythm disturbance.

Additional Indexing Words:
Thoracic diameter Computerized tomogram

STRAIGHT back syndrome consists of loss of the normal upper thoracic spinal curvature. As the spine straightens the postero-anterior dimension of the chest decreases and leads to a forward and leftward displacement of the heart and great vessels. Patients with this condition are mostly asymptomatic but they commonly have clinical signs mimicking organic heart disease.1) We report a case of straight back syndrome with mild pectus excavatum who presented with palpitations on swallowing due to supraventricular ectopics. Swallowing-related palpitations have not been reported before in this syndrome.

CASE REPORT

A 45 year old dentist presented to us with the complaint of palpitations on swallowing both liquids and solids. On clinical examination the patient had pectus excavatum and decreased antero-posterior thoracic diameter. The cardiovascular system examination was normal apart from a grade II ejection systolic murmur over the left second inter-costal space. Examination of other systems was normal.

The resting electrocardiogram was normal. On swallowing liquids

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during electrocardiographic monitoring, he developed 2–3 supraventricular ectopics with each gulp (Fig. 1). Lateral chest x ray showed loss of normal thoracic curvature. The distance from the middle of the anterior border of T8 to a vertical line connecting T4 and T12 was found to be less than 0.5 cm. Stress test showed a normal exercise tolerance with no precipitation of ectopics. Echocardiogram was normal apart from a small left atrium (left atrium 1.8 cm, aorta 2.5 cm). On barium swallow the esophagus was displaced to the right but the mucosal pattern was normal (Fig. 2). Computerized axial tomography of the chest showed no extrinsic mass lesion responsible for displacement of the esophagus. Proximity of the esophagus to the posterior left atrial wall could be well appreciated (Fig. 2). The patient was started on verapamil for suppression of ectopics. On review 3 days later the patient was asymptomatic and supraventricular ectopics could no longer be preci-
pititated by swallowing. The patient has remained asymptomatic for over a year.

**Discussion**

Straight back syndrome is a well-recognized cause of ‘pseudo heart disease’. The decreased antero-posterior thoracic diameter results in compression of the heart and kinking of the great vessels. Compression of the heart gives an impression of an increase in cardiothoracic ratio on chest x-ray, whereas kinking of the great vessels results in a cardiac murmur due to generation of turbulent flow. Most patients are asymptomatic and generally come to medical attention on detection of a cardiac murmur on routine clinical examination. The diagnosis of straight back syndrome was confirmed in our patient by lateral chest x-ray and computerized tomograms. An antero-posterior thoracic diameter of less than 10.2 cms at the eighth thoracic vertebral level is considered diagnostic of this syndrome. This was 8.5 cms in our patient. The distance from the middle of the anterior border of T8 to the vertical line joining T4 and T12 was less than 0.5 cm as against a normal of 2.5 cm, further confirming the diagnosis of straight back syndrome. Marked displacement of the esophagus to the right of the midline as seen in our patient has not been reported before in this syndrome. There was no extrinsic pathology responsible for this shift and hence it must have been due to the extreme degree of reduction of the antero-posterior diameter of the chest due to both the straight back syndrome and the mild pectus excavatum.

Our patient presented with the symptom of palpitations on swallowing which were documented to be due to supraventricular ectopics. We believe that the ectopics resulted from compression of the left atrium by the distended esophagus during swallowing. There are only a few published reports in which disorders of impulse formation and its propagation in the heart have been observed in relation to swallowing. A search of the world literature reveals 24 cases of swallowing-induced tachycardia. None of these cases had a straight back syndrome. The mechanism of this arrhythmia is obscure. Some authors have previously suggested a direct mechanical interaction between the distended esophagus and the adjacent left atrium. They have demonstrated the induction of arrhythmia by inflation of a balloon in the esophagus only at the subcarinal level. Lindsay proposed a vagal nerve-mediated neural reflex as the initiating mechanism. Demonstration of SV ectopics on swallowing in a patient with severe straight back syndrome, as in our case, lends support to the theory of a mechanical basis.
of the arrhythmia on swallowing. It is likely that the origin of the atrial impulse was from the posterior left atrial wall since the posterior wall of the left atrium lies immediately anterior to the esophagus. This is the region which is expected to be stimulated when the esophagus distends in a limited space.

REFERENCES