1:00 P.M.

INTRODUCTORY REMARKS
Daniel J. Reddy, MD, President

1:00 P.M. – 2:45 P.M.

SESSION I
PRESIDING: Daniel J. Reddy MD, President and Krishna M. Jain, MD

1. Costochondral Calcification, Osteophytic Degeneration and Occult First Rib Fractures in Patients with Venous Thoracic Outlet Syndrome
George Sheng, MD, Valerie Emery, RN and Robert Thompson, MD
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OBJECTIVES: Subclavian vein (SCV) compression in venous thoracic outlet syndrome (TOS) has been attributed to various anatomic factors, but a potential role for costochondral degeneration in the underlying first rib has not been previously examined. The purpose of this study was to examine the frequency of costochondral calcification (CC), osteophytic degeneration (OD), and occult first rib fracture (FRFx) in patients with venous TOS.

METHODS: During a 12-month period 37 patients with SCV effort thrombosis received surgical treatment of venous TOS. All patients underwent paraclavicular thoracic outlet decompression with complete resection of the first rib. The presence or absence of CC, OD and FRFx was determined by direct visual examination of the rib at operation and following debridement of adherent soft tissues in the excised specimen.

RESULTS: No patient has radiographic first rib abnormalities. FRFx were observed in 16 of 37 patients (43%). All FRFx were small, nondisplaced, linear lesions located within an area of CC in the anterior rib medial to the scalene tubercle. The mean age of patients with FRFx was higher than those with a normal first rib (38.1 ± 1.5 yr vs 25.0 ± 2.3 yr; P < 0.0001), and FRFx was present in 16 of 21 (76%) patients 30 years of age but in no patients younger than 30 (P < 0.0001).

CONCLUSIONS: A high proportion (43%) of patients with venous TOS exhibited CC, OD, and a previously undetected FRFx, including 76% of those over the age of 30. These lesions occur in the cartilaginous anterior rib where they are clinically occult and undetected by standard radiographic imaging. We postulate that age-related CC may predispose to stress-induced OD and FRFx, and
that inflammation and anatomic distortion may contribute to SCV compression. Further investigation will be needed to determine the cause(s) and influence of occult FRFx in the development of venous TOS.

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