PRACTICE GUIDELINES: EVALUATION OF THE WIDENED MEDIASTINUM

OBJECTIVES:

1. Define the indications of pursuing an evaluation to rule out a thoracic aortic injury.
2. Suggest possible diagnostic paradigms for the evaluation of thoracic aortic injury.

DEFINITIONS:

Thoracic aortic injury: A disruption of the thoracic aorta from blunt deceleration trauma. This injury usually occurs at the ductus arteriosum which is just distal to the take-off of the left subclavian artery. Occasionally, the aorta may rupture in the ascending portion and at the take-off of the major vessels.

Widened mediastinum: Definition: A mediastinum measurement of ≥8 cm or >1/3rd the transthoracic distance at the level of the aortic knob on a supine AP film.

GUIDELINES:

1. Initially assume that there is an aortic injury on every patient with a rapid deceleration mechanism of injury.

2. Evaluate and treat the ABC's. Obtain blood pressure in both arms.

3. Obtain a chest X-ray. Examine for a widened mediastinum (≥8 cm at level of aortic knob). The following signs are confirmatory of a possible aortic injury, but in themselves, do not suggest the need for further evaluation.
   a. Pleural cap.
   b. Depressed left mainstem bronchus.
   c. Trachea or esophagus deviated to right.
   d. First and second rib fracture.
   e. Obliterated aorto-pulmonary window.

4. Assess for symptomatic upper extremity BP differences (> 10 mmHg), pseudocoarctation syndrome or infrascapular murmur. These are also suggestive of aortic injury.

5. If the possibility of aortic injury is considered at any point in the resuscitation, avoid hypertension. Extremely high blood pressures should be treated with a short acting intravenous beta-blocker (e.g., labetalol or esmolol).

6. If a widened mediastinum is found and the patient can sit up, obtain an upright chest X-ray. The sitting position will decrease the possibility of spurious widening of the mediastinum due to the gravity effects on the heart (i.e. splays it apart) and magnification from the AP projection.

7. If the mediastinum is still widened or an upright film cannot be performed, obtain a chest CT angiogram with cuts through the aortic arch. If the CT scan shows no periaortic mediastinal blood, or dissection flap within the lumen of the aorta, then an aortic injury has been ruled out.

8. A thoracic angiogram should be obtained in the following circumstance:

a. The chest X-ray shows a widened mediastinum and a CT scan or TEE cannot be performed.
b. A chest CT scan shows blood in the mediastinum or an aortic disruption. The need for angiogram will be determined by the cardiothoracic surgeon or vascular surgeon.