

Imaging diagnosis

Case 363

5. Open thoracic aortic rupture

【Progress】

He was transported to the stem hospital where cardiovascular surgeon and interventional radiologists served for thoracic aortic aneurysm rupture.

【Discussion】

Measurement of aortic aneurysm is used on CT, MRI and angiography. In each modality, transverse, longitudinal and anterior-posterior diameter can be measured. The shortest diameter is evaluated as a diameter of aortic aneurysm (1-3).

Definition of aortic aneurysm is 1.5-fold diameter or greater of intact aortic diameter (1-3). Though aortic size differs in each person, based on probability of 95%, the size of thoracic aorta and abdominal aorta is 30mm and 20mm, respectively (2, 3). Then, the definition of thoracic aortic aneurysm and abdominal aortic aneurysm is 45mm or greater and 30mm or greater, respectively. Regarding ascending aortic aneurysm, it is defined as 50mm or greater (1-3).

Thoracic aorta is subdivided into ascending aorta (aortic valve to carotid branch), arch (carotid branch to bifurcation of pulmonary artery stem), descending thoracic artery (pulmonary artery bifurcation to diaphragm) (4,5). Abdominal aorta is subdivided into suprarenal (diaphragm to renal artery branch), pararenal and infrarenal (renal artery branch to abdominal arch bifurcation) (6-8).

Aortic aneurysm rupture is categorized into three types; impending rupture, present pain caused by aneurysm yet not to rupture, present a component of high attenuation in aortic aneurysm thrombus wall or abdominal aortic aneurysm wall itself; sealed rupture, ruptured aortic aneurysm or ruptured hematoma encapsulated with the surrounding organ or structure: open rupture, complete disruption of aortic aneurysm wall into pleural space, mediastinum, peritoneal space or retroperitoneum (2-4).

Surgical indication of aortic aneurysm is based on diameter of aortic aneurysm follows; 55mm or greater for ascending aortic aneurysm or arch aneurysm; 60mm or greater for descending aortic aneurysm or suprarenal abdominal aortic aneurysm; 55mm or greater for abdominal aortic aneurysm below renal artery (1-3). Managements for aortic aneurysm are listed: artificial vessel replacement under open thoracic or abdomen surgery and/or stent graft placement by endovascular aneurysm repair (EVAR) (1-3, 9).

In our case, thoracic arch aneurysm whose diameter was 57.9mm associated with intrapleural high attenuation fluids whose CT values were 41HU indicative open rupture of aortic arch rupture. He was transported to the stem hospital where cardio-surgeon could serve.

【Summary】

We presented an eighty-year-old male with open rupture of aortic arch aneurysm, 57.9mm in diameter into pleural space. It is borne in mind that aortic aneurysm rupture is categorized into impending aortic aneurysm: impending, sealed, open. Surgical indication for ascending aortic aneurysm and abdominal aortic aneurysm is 55mm or greater and for descending thoracic aortic aneurysm is 60mm or greater. The diagnosis of aortic aneurysm is basically 1.5-fold-dilatated of intact aortic diameter: 50mm or greater in ascending aorta and arch, 45mm or greater in thoracic aorta below pulmonary artery bifurcation and abdominal aorta.

【References】

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