

Vascular Ring and Sling (and other things) Imaging-Two Year Experience

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Background: Airways obstruction and stridor are common in children, a portion of these are caused by abnormalities in the embryologic development of the aorta and pulmonary arteries, known as vascular rings and slings. In most centers Computerized Tomographic Angiography (CTA) is used to evaluate these abnormalities. Recently we have begun to use MRI/A instead of CTA in order to avoid ionizing radiation exposure and injection of iodinated contrast agents administration.

Methods: A retrospective analysis of imaging data from December 2009 to November 2011 was performed. The study group included 17 patients with suspected aortic arch or pulmonic arterial abnormalities by either physical examination and/or echocardiography, including fetal echocardiography (age range: 2 days-36 years, mean age: 63 months; weight of 3.1 kg-57 kg) Seven patients were scanned using CTA and ten patients using MRI/A . All the studies were supervised and interpreted by a dedicated team of a cardiologist and radiologist for detecting cardiovascular and extravascular abnormalities.

Results: Among the CTA (N=7) patients, 4 patients had a vascular ring associated with right aortic arch, 1 patient had a vascular sling, 2 patients had tracheo-bronchial compression by an enlarged pulmonary artery. Among the MRI/A patients 7 patients had a vascular ring associated with right aortic arch, and 3 patients had aortic arch abnormalities without vascular ring.

Complication: one infant had apnea easily managed by bag-mask before entering the MRI scanner ventilation and was then scanned. Both CTA and MRI/A findings were confirmed by the operative findings. No difference was found in the accuracy of pre-operative diagnosis between CTA or MRI/A findings.

Conclusion: Cardiac MRI and CTA are comparable modalities to evaluate vascular rings and slings. In our experience MRI/A, lacking of risks of ionizing radiation and iodinated contrast agents, has become a useful alternative in stable patients.