

2010 Imaging Criteria

Magnetic Resonance Angiogram (MRA), Cardiac^(1, 2)

ICD-9-CM: 88.42, 88.43, 88.44

CPT: 76498

I/O Setting: Outpatient

INDICATION(S)

100 Congenital heart disease

200 Coronary artery anomaly by cardiac catheterization

100 Congenital heart disease **[All]**^(3*RIN)

110 Preoperative evaluation

120 Low CAD risk⁽⁴⁾

130 Send for secondary medical review^(5*MDR)

200 Coronary artery anomaly by cardiac catheterization **[Both]**⁽⁶⁾

210 Preoperative evaluation

220 Additional imaging information needed⁽⁷⁾

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Notes

(1)

MRA is an application of MRI that produces images of blood vessels for noninvasive evaluation of the arterial as well as venous circulation. Unlike a conventional angiogram or CTA, MRA does not involve ionizing radiation or the administration of iodinated IV contrast which is nephrotoxic and can cause an allergic reaction in some patients. MRA is not usually performed in addition to an angiogram, but as a substitute for angiogram.

(2)

The following are examples of relative and absolute contraindications to the use of MR imaging:

- Implanted devices that are electrically or magnetically activated (e.g., cardiac pacemakers, automatic cardioverter defibrillators, drug infusion pumps, cochlear implants)
- Ferromagnetic metal objects (e.g., cerebral aneurysm clips, intraocular metallic foreign body, prostheses, screws)
- Pregnancy, first trimester

(3)-RIN:

These criteria include evaluation of patients with complex congenital heart disease such as anomalies of the coronary circulation, great vessels, and cardiac chambers (Tops et al., *J Am Coll Cardiol Img* 2008; 1(1): 94-106; Hendel et al., *J Am Coll Cardiol* 2006; 48(7): 1475-1497).

(4)

The probability of a patient having CAD can be estimated based on history, clinical findings, abnormal resting ECG, and multiple risk factors for atherosclerosis. One model uses age, gender, and chest pain characteristics, with the latter being the most predictive for CAD. Risk can be stratified as high > 90% probability, intermediate 10% to 90% probability, low < 10% probability, and very low < 5% probability. This model has been developed for patients between the ages of 30 and 69. Patients considered to have a low probability of CAD include: men and women in their 30s with nonanginal chest pain, women in their 40s with atypical angina or nonanginal chest pain, women in their 50s with nonanginal chest pain, and asymptomatic men and women in all age groups (Gibbons et al., *Circulation* 2002; 106(14): 1883-1892).

(5)-MDR:

Structural heart disease is most commonly documented by TTE or occasionally by TEE (Douglas et al., *J Am Coll Cardiol* 2007; 50(2): 187-204; Bonow et al., *J Am Coll Cardiol* 2006; 48(3): e1-148). Information on the coronaries is obtained through coronary angiography or CTA. There is limited evidence to support the use of cardiac MRA for evaluation of the coronaries. Therefore, requests for cardiac MRA for assessing the coronaries in patients with congenital heart disease require secondary medical review.

(6)

Coronary anomalies (e.g., anomalies of the origin from the coronary sinus, ectopic origin of the main pulmonary artery) are rare conditions but possible consequences include sudden cardiac death, MI, or other cardiac symptoms (e.g., angina, syncope, CHF) (Kacmaz et al., *Clin Cardiol* 2008; 31(1): 41-47; Komatsu et al., *Heart Vessels* 2008; 23(1): 26-34).

(7)

Congenital coronary anomalies are usually discovered incidentally during invasive coronary angiography. Sometimes, the course of the abnormal artery can be difficult to ascertain from the 2-dimensional data provided by invasive angiography and noninvasive coronary imaging may be used to complete the imaging assessment of the coronary vasculature (Schroeder et al., *Eur Heart J* 2008; 29(4): 531-556; Hendel et al., *J Am Coll Cardiol* 2006; 48(7): 1475-1497).