

MRI Chest

CPT: 71550, 71551, 71552

1 Aneurysm Suspected

- 1.1 Aneurysm on prior examination
- 1.2 Aortic Arch abnormal on CXR
- 1.3 Arch or Descending Aorta > 3.5 cm diameter on CXR
- 1.4 Ascending Aorta > 4.5cm cm diameter on CXR
- 1.5 Marfan's, Turner's or Ehlers-Danlos Syndrome

References

1. Elefteriades John A, Olin Jeffrey W, Halperin Jonathan L, "Chapter 105. Diseases of the Aorta" (Chapter). Fuster V, O'Rourke RA, Walsh RA, Poole-Wilson P, Eds. King SB, Roberts R, Nash IS, Prystowsky EN, Assoc. Eds.: Hurst's The Heart, 12th Edition: <http://www.accessmedicine.com/content.aspx?aID=3075150>.
2. Eli Atar, Alexander Belenky, Menashe Hadad, Ehud Ranany, Shlomo Baytner, and Gil N. Bachar MR Angiography for Abdominal and Thoracic Aortic Aneurysms: Assessment Before Endovascular Repair in Patients with Impaired Renal Function Am. J. Roentgenol., Feb 2006; 186: 386 – 393
3. Eric M. Isselbacher Thoracic and Abdominal Aortic Aneurysms Circulation, Feb 2005; 111: 816 – 828. Christian
4. Olsson, Stefan Thelin, Elisabeth Ståhle, Anders Ekbom, and Fredrik Granath Thoracic Aortic Aneurysm and Dissection: Increasing Prevalence and Improved Outcomes Reported in a Nationwide Population-Based Study of More Than 14 000 Cases From 1987 to 2002 Circulation, Dec 2006; 114: 2611 – 2618
5. S. Illiceo, G. Ettorre, et al Diagnosis of aneurysm of the thoracic aorta. Comparison between two non invasive techniques: two-dimensional echocardiography and computed tomography Eur. Heart J., Jul 1984; 5: 545 – 555

2 Aortitis

2.1 Fever

2.2 Night sweats

2.3 Raynaud's Phenomenon

2.4 Upper extremity claudication

References

1. A K Scheel, J Meller, R Vosshenrich, E Kohlhoff, U Siefker, G A Müller, F Strutz Diagnosis and follow up of aortitis in the elderly Ann Rheum Dis 2004;63:1507-1510
2. Thatipelli Mallik, Cooper Leslie, "Inflammatory Aortic Diseases" (Update). Fauci AS, Braunwald E, Kasper DL, Hauser SL, Longo DL, Jameson JL, Loscalzo J: Harrison's Principles of Internal Medicine, 17e: <http://www.accessmedicine.com/updatesContent.aspx?aid=1000083>. Accessed 04/20/10

3 Brachial Plexus Pathology (Plexopathy) MRI of shoulder or C spine with contrast preferred.

NOTE

Plexopathy refers to an abnormality of the complex of nerve roots exiting the spine and organizing into the nerves serving the arm, trunk or legs. Symptoms may include burning, tingling, or numbness in a circumferential or dermatomal distribution. The symptoms may radiate to the hand or remain localized in the neck.

3.1 Indications BOTH

3.1.1 History

3.1.1.1 Breast or lung cancer

3.2.1.1.1 Aliya Qayyum, A. David MacVicar, Anwar R. Padhani, Patrick Revell, and Janet E. S. Husband
Symptomatic Brachial Plexopathy following Treatment for Breast Cancer: Utility of MR Imaging with
Surface-Coil Techniques Radiology March 2000 214:837-842

3.1.1.2 History of radiation therapy to the chest, breast or axilla

3.1.1.2.1 Bowen, BC, Verma, A, Brandon, AH, Fiedler, JA Radiation-induced brachial plexopathy: MR
and clinical findings AJNR Am J Neuroradiol 1996 17: 1932-1936

3.1.1.3 Palpable mass in neck or shoulder area

3.1.1.4 Trauma, including at birth

3.1.2 Symptoms of upper extremity

3.1.2.1 Numbness

3.1.2.2 Paresthesias

3.1.2.3 Radiating pain

3.1.2.3 Weakness

References:

1. ACR Appropriateness Criteria Plexopathy p10 Accessed 12/28/08 Aliya Qayyum, A. David MacVicar, Anwar R. Padhani, Patrick Revell, and Janet E. S. Husband Symptomatic Brachial Plexopathy following Treatment for Breast Cancer: Utility of MR Imaging with Surface-Coil Techniques Radiology 2000 214: 837-842.
2. BC Bowen, A Verma, AH Brandon, and JA Fiedler Radiation-induced brachial plexopathy: MR and clinical findings AJNR Am. J. Neuroradiol., Nov 1996; 17: 1932 – 1936. Neurosurgical Focus Posted 04/02/2007 Accessed 1/4/09 @ http://www.medscape.com/viewarticle/553963_1
3. Bowen B, Seidenwurm DJ, Davis P, et al, Expert Panel on Neurologic Imaging, American College of Radiology, Appropriateness Criteria, Plexopathy, accessed at http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonNeurologicImaging/PlexopathyDoc12.asp 12/28/08 Devin K. Binder, M.D., Ph.D.; Justin S. Smith, M.D., Ph.D.; Nicholas M. Barbaro, M.D Primary Brachial Plexus Tumors: Imaging, Surgical, and Pathological Findings in 25 Patients Neurosurgical Focus Medscape Radiology accessed 12/28/08 Edward Fathers, David Thrush, Susan M Huson, and Andrew Norman Radiation-induced brachial plexopathy in women treated for carcinoma of the breast Clinical Rehabilitation, Feb 2002; 16: 160 – 165. Neoplastic Brachial Plexopathy Author: Mark A Wren, MD, MPH, Medical Director, Department of Physical Medicine and Rehabilitation, HealthSouth Rehabilitation Hospital of Texarkana eMedicine Specialties > Physical Medicine and Rehabilitation > Plexopathy Updated: Jan 19, 2010 Accesed 3/15/10 Vincent J. Miele, M.D.; John A. Norwig, A.T.C.; Julian E. Bailes, M.D. Sideline and Ringside Evaluation for Brain and Spinal Injuries Walker, AT, Chaloupka, JC, de Lotbiniere, AC, Wolfe, SW, Goldman, R, Kier, EL Detection of nerve rootlet avulsion on CT myelography in patients with birth palsy and brachial plexus injury after trauma Am. J. Roentgenol. 1996 167: 1283-1287 T. Yoshikawa, N. Hayashi, S. Yamamoto, Y. Tajiri, N. Yoshioka, T. Masumoto, H. Mori, O. Abe, S. Aoki, and K. Ohtomo Brachial Plexus Injury: Clinical Manifestations, Conventional Imaging Findings, and the Latest Imaging Techniques RadioGraphics, October 1, 2006; 26(suppl_1): S133 – S143.
4. A. TAVAKKOLIZADEH, A. SAIFUDDIN, and R. BIRCH Imaging of Adult Brachial Plexus Traction Injuries J Hand Surg Eur Vol., June 1, 2001; 26(3): 183 – 191

4 Cardiac Mass detected by other imaging

5 Coarctation suspected MRA is the test of choice

5.1 Absent pulses in groin

5.2 Harsh systolic murmur

5.3 Hypertension in arms, not in legs

5.4 Strong arterial pulsations in the neck and suprasternal notch

References

1. Elisabeth Beran, Heinrich Mächler, Gert Reiter, and Rainer Rienmüller Flow-related magnetic resonance; visualization of a re-coarctation Eur. J. Cardiothorac. Surg., May 2008; 33: 924.
2. "Coarctation of the Aorta." Quick Answers to Medical Diagnosis and Therapy: <http://www.accessmedicine.com/quickam.aspx>.

6 Dissection of Aorta, suspected

- 6.1 Absent distal pulses
- 6.2 Acute onset of severe chest, upper back, or abdominal pain
- 6.3 Pain with abnormal appearance of aorta on prior imaging
- 6.4 Prior Aneurysm Repair
- 6.5 Unequal blood pressure in arms

References

1. ACR Appropriateness Criteria® Acute Chest Pain-Suspected Aortic Dissection 2008
2. A. Khan and Chandra K. Nair Clinical, Diagnostic, and Management Perspectives of Aortic Dissection Chest July 2002 122:311-328
3. Kersting-Sommerhoff, BA, Sechtem, UP, Fisher, MR, Higgins, CB MR imaging of congenital anomalies of the aortic arch Am. J. Roentgenol. 1987 149 9-13
4. Paul J. Arpasi, Kostaki G. Bis, Anil N. Shetty, Richard D. White, and Orlando P. Simonetti MR Angiography of the Thoracic Aorta with an Electrocardiographically Triggered Breath-Hold Contrast-enhanced Sequence RadioGraphics 2000 20: 107-120
5. Prince MR. Gadolinium-enhanced MR aortography. Radiology 1994; 191:155-164
6. Roche, Kevin J., Rivera, Rafael, Argilla, Michael, Fefferman, Nancy R., Pinkney, Lynne P., Rusinek, Henry, Genieser, Nancy B. Assessment of Vasculature Using Combined MRI and MR Angiography Am. J. Roentgenol. 2004 182: 861-866
7. Patel, Pawan D., Arora, Rohit R. Pathophysiology, diagnosis, and management of aortic dissection Therapeutic Advances in Cardiovascular Disease 2008 2: 439-468
8. G. Sutsch et al, Predictability of aortic dissection as a function of aortic diameter Eur. Heart J., Jan 1991; 12: 1247 – 1256
9. Hematoma, Intramural of Aorta See Dissection of Aorta,suspected

8 Marfan's syndrome, known CTA or MRA preferred

References:

1. Westaby, Stephen Aortic dissection in Marfan's syndrome Ann Thorac Surg 1999 67: 1861-1863
2. Engelfriet, P M, Boersma, E, Tijssen, J G P, Bouma, B J, Mulder, B J M Beyond the root: dilatation of the distal aorta in Marfan's syndrome Heart 2006 92: 1238-1243
3. Kalkat, Maninder S., Rahman, Ishtiaq, Kotidis, Kostas, Davies, Ben, Bonser, Robert S. Presentation and outcome of Marfan's syndrome patients with dissection and thoraco-abdominal aortic aneurysm Eur J Cardiothorac Surg 2007 32: 250-254
4. Milewicz DM, Dietz HC, Miller DC. Treatment of aortic disease in patients with Marfan syndrome. Circulation 2005;111:e150-e157 "In Marfan's syndrome (MFS), the dominant vascular pathology affects the ascending aorta"