Ο ρόλος της CMR σε συστηματικές παθήσεις με καρδιακές εκδηλώσεις

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INTRODUCTION TO VASCULITIDES

Medium-sized vessel vasculitides:
• Polyarteritis nodosa (PAN) “nodular coronaritis”.
• Kawasaki disease (KD)

Small vessel vasculitides:
• Wegener’s granulomatosis (WG)
• Microscopic polyangiitis (MPA)
• Churg-Strauss syndrome (CSS)

MPA, WG and CSS share several clinical and pathologic features and the association with serum antineutrophil cytoplasmic antibodies (ANCA), which is unusual in PAN
KAWASAKI DISEASE

- Acute vasculitis of unknown etiology in children <5 years
- Concurrent myocarditis / pericarditis with coronary artery aneurysms in 15-25% of untreated cases
- Half of the children with CAA during the acute phase have normal - appearing vessels by angiography 1-2 years later
- CAAs may rupture, thrombose, or develop stenotic lesions.
- Transthoracic echo sufficient in children, but deficient in adolescence
KAWSASKI DISEASE

Mavrogeni et al. JACC 2004
MAGNETIC RESONANCE ANGIOGRAPHY,
FUNCTION AND VIABILITY EVALUATION IN
PATIENTS WITH KAWASAKI DISEASE

Mavrogeni et al JCMR 2005
CARDIOVASCULAR MAGNETIC RESONANCE REVEALS MYOCARDIAL INFLAMMATION AND CORONARY ARTERY ECTASIA DURING THE ACUTE PHASE OF KAWASAKI DISEASE

Mavrogeni et al Int J Cardiol 2008
ALGORITHM ABOUT HOW TO IMAGE KAWASAKI DISEASE

• **Echo:** the bedside technique of choice during the acute phase (coronaries and cardiac function).

• **MRI:** especially valuable in adolescents (advantage of simultaneous perfusion, function and viability evaluation).

• Combination of **Echo and SPECT**, if MRI is not available.

• **MSCT** is of **limited value for follow-up**, because of radiation and the misleading data due to coronary calcifications.

• **X-Ray coronary angiography** mainly for cases, where an **invasive procedure** should be performed.

Mavrogeni et al Int J Cardiol 2007
Coronary Artery And Viability Evaluation In Anca-Associated Vasculitides Using Magnetic Resonance Imaging

- Polyarteritis nodosa (PAN), Microscopic Polyangiitis (MPA), Wegener’s Granulomatosis (WG) and Churg-Strauss syndrome (CSS) are forms of necrotizing vasculitis.

- CMR assessment of patients with systemic vasculitis reveals coronary ectatic disease in the majority of patients with MPA and PAN, as well as in several patients with WG. Myocardial necrosis can be detected in MPA and CSS.

Mavrogeani et al Arthritis Rheumatism 2009
CORONARY ECTASIA AND MYOCARDIAL SCAR IN MPA

Mavrogeni et al Arthritis Rheumatism 2009
Microscopic polyangiitis and Kawasaki disease without overt clinical cardiovascular manifestations and with abnormal CMR findings

Mavrogeni et al. Int J Cardiol 2009
CMR IN CHURG-STRAUSS SYNDROME

Mavrogeni et al, Int J Cardiol 2007
Cardiovascular involvement in systemic lupus erythematosus: an autopsy study of 27 patients in India.

- Cardiovascular disease (CVD) is a leading cause of death in patients with systemic lupus erythematosus (SLE) in West.

- **Valvar lesions** the commonest cardiac lesions noted with non-bacterial thrombotic endocarditis in 33%

- **Myocarditis, myocardial scarring** in 37% and 26%

- **Thromboses/embolism** in 33.33%

- **Vasculitis and coronary atherosclerosis** in 18.52% and 3.70%

Myocardial tissue characterization in systemic lupus erythematosus: value of a comprehensive cardiovascular magnetic resonance approach.

- An imaging approach combining T2-weighted, early and late enhancement imaging is a useful tool to assess possible myocardial involvement in SLE.
- CMR parameters of global myocardial involvement correlate well with disease activity, but not with usual clinical signs as summarized in a cardiac score.

*Abdel-Aty H*, et al. Lupus 2008
CMR IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) AND SJOGREN SYNDROME (SS)

- CMR may reveal myocarditis in SLE patients even in the absence of active disease and/or signs of heart disease, as well as in SS patients with cardiac symptoms.

- The detection of myocardial involvement by CMR in SLE and SS needs to be prospectively validated.

Manoussakis et al EULAR 2008
CMR IN TAKAYASU ARTERITIS

Mavrogeni S et al Int J Cardiol 2009
Frequent Detection Of Myocardial Inflammation In Autoimmune Diseases (AD)

- Autoimmune diseases with myocarditis: SLE, RA, Takayasu’s art, SS, thyroid disease.
- Assess by T2-w, early T1-w, LGE images.
- Positive histology and PCR in agreement with 50% and 87.5% of positive CMR.
- Herpes virus, Adeno, Coxsackie B6, Echo, Parvo-B19, CMV, Chlamydia trachomatis or coexistence
- CMR can early diagnose myocardial inflammation

S. Mavrogeni, et al Inflam Allergy DT 2010
Pattern and distribution of myocardial fibrosis in systemic sclerosis: a delayed enhanced magnetic resonance imaging study

- DE-MRI can identify myocardial fibrosis in a significant percentage of patients with SSc and may be a useful non-invasive tool for determining cardiac involvement.

MYOSITIS

• Treatment with IV methylprednisolone followed by prednisone and immunosuppressive therapy seems to be effective for treating myocardial involvement in patients with idiopathic inflammatory myopathies.

• CMR is a non-invasive technique that may be a powerful tool for diagnosis and monitoring of myocardial inflammation in this setting.

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