ORIGINAL RESEARCH PAPER

Radiodiagnosis

CARDIAC MAGNETIC RESONANCE IN SARCOIDOSIS - BEYOND CATHETER & ECHO-CARDIOGRAPHY

KEY WORDS:
Sarcoidosis, Late Gadolinium Enhancement

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ABSTRACT

Sarcoidosis is a multi-organ disease of unknown etiology and cardiac involvement is rare, reported in < 5 % of patients with systemic Sarcoidosis
It can be seen in all age groups, but most commonly seen in middle-aged patients predominantly (20-45 years) More commonly seen in females.
Clinical presentation is mostly non specific, consisting of constitutional symptoms such as anorexia, weight loss ,malaise, and fever.
MRI-Late Gadolinium enhancement sequence and thus the resulting cardiac involvement pattern has been at the epi-center for estimation of cardiac involvement in Sarcoidosis, being a more likely differential. However mediastinal lymph node biopsy is confirmatory.

CASE HISTORY:

A 32 year old male patient who underwent invasive coronary angiography, which demonstrated normal coronary angiogram, presented with pre-cordial discomfort, shortness of breath and non sustained ventricular tachycardia. ECG was normal. Transthoracic echocardiography revealed moderately reduced global left ventricular ejection fraction of 37% with globally hypokinetic contraction of the ventricles. Multi-planar Cardiac MRI was performed on strong suspicion with Gadolinium as a contrast agent, which demonstrated delayed enhancement predominantly of interventricular septum and subepicardial region corresponding the scar.

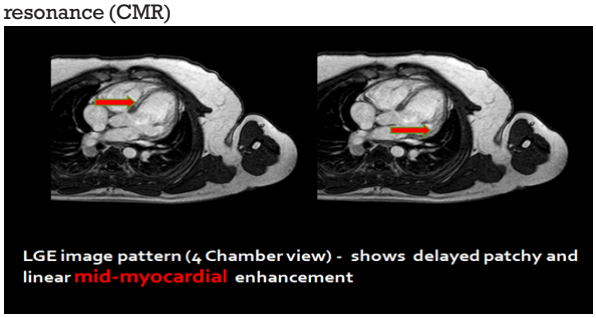
The patient further demonstrated enlarged bilateral mediastinal and hilar lymph nodes further forced us to consider Sarcoidosis as a strong differential and so advised lymph nodes biopsy.

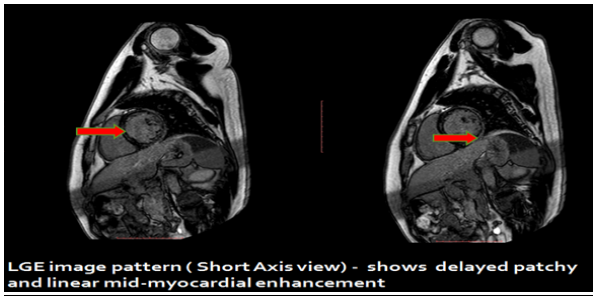
In view of raised Serum ACE levels and lymph node histopathology report, diagnosis of Sarcoidosis was confirmed and steroids were started as a treatment. Post follow up, the patient showed marked improvement in ejection fraction to 47 % after 6 months of continuous treatment.

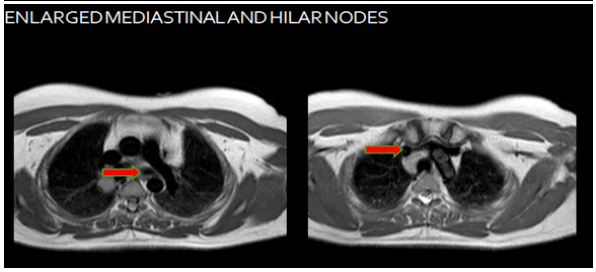
DISCUSSION:

Sarcoidosis is a multisystem, granulomatous disease of unknown etiology. Accumulating evidence suggests that it is caused by an immunological response to an unidentified antigenic trigger in genetically susceptible persons. Non-Caseating granulomas are the histopathological hallmark. The lungs are affected in more than 90% of patients, and the disease can rarely involve the heart, liver, skin, spleen, eyes, or other organs. Most disease occurs in patients 25 to 55 years of age and it is rare in people <15 or >70 years of age. Sarcoidosis is a chronic granulomatous disease.

The aetiology of sarcoidosis remains obscure. Infectious (Mycobacterium tuberculosis, Mycoplasma species, Corynebacteria species, spirochetes) and environmental agents (aluminium, pollen, talc) have been implicated as potential antigens. These antigens, non self or self, are thought to trigger primarily the helper inducer T cells leading to the formation of granuloma lesions. Familial clustering indicates a strong genetic element in sarcoidosis.
Clinically manifest cardiac involvement occurs in perhaps < 5 % of patients with Sarcoidosis. In addition, many patients found cardiac involvement (clinically silent disease) autopsy findings found consistent with recent data using late gadolinium enhanced (LGE) cardiovascular magnetic resonance (CMR)



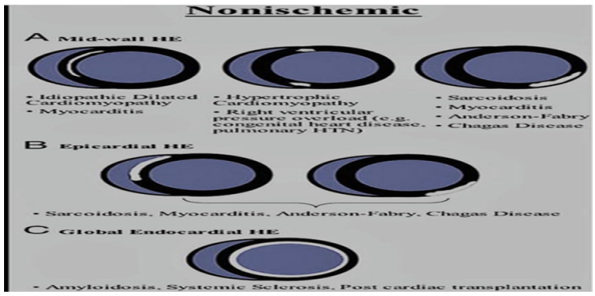




DIFFERENTIAL DIGNOSIS :

The following chart shows various involvement patterns in non-ischemic Cardiomyopathy, patchy linear mid myocardial and sub epi-cardial involvement point towards Sarcoidosis.

- Sarcoidosis
- Amyloidosis
- Myocarditis
- Tuberculosis
- Other rare causes like Fabry's disease, Churge Strauss syndrome etc.



CONCLUSION:

As a cause of sudden cardiac death associated with nonspecific clinical manifestations and imaging features that overlap with those of other infiltrative and inflammatory cardiac disorders, Cardiac Sarcoidosis remains a diagnostic challenge, demands strong suspicion. Though other ancillary modalities are there, CEMR commonly preferred being more sensitive over catheter and 2D -echocardiography and can act as a screening test. Prospective histopathological studies required further to confirm the diagnosis, monitor therapy and risk stratification.

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