"Change of Heart": The Utilization of Cardiac PET/CT Sarcoid Imaging and the Application to Emergency Radiology

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PURPOSE

Cardiac sarcoidosis (CS) poses diagnostic challenges, especially in the emergency room (ER) setting due to its variable clinical presentation.

PET/CT has emerged as a valuable tool for diagnosing cardiac sarcoidosis, yet its utility in the acute setting remains understudied.

We discuss the presentation and evaluation of CS in the acute setting and the utilization of PET/CT to evaluate for the presence of cardiac sarcoidosis to improve diagnostic accuracy.

BACKGROUND/METHODS

This review aims to summarize the current strategies and challenges in the evaluation of CS in the ER setting, focusing on diagnostic modalities, clinical presentation, and therapeutic interventions.

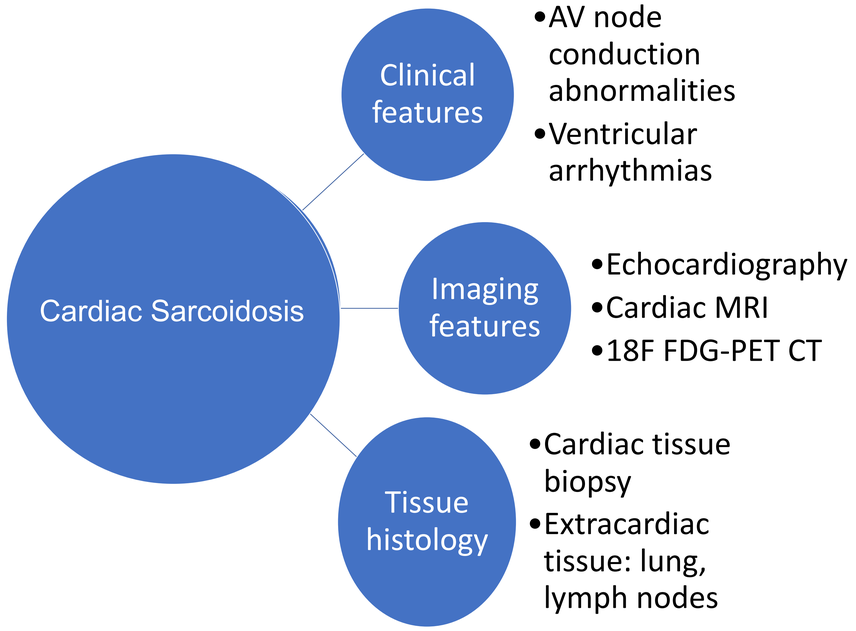
The evaluation of CS in the ER setting remains challenging due to its variable clinical presentation and limited diagnostic tools.

Multimodal imaging approaches and collaboration between emergency physicians, cardiologists, radiologists and other specialists are essential for timely diagnosis and management of CS in the acute setting.

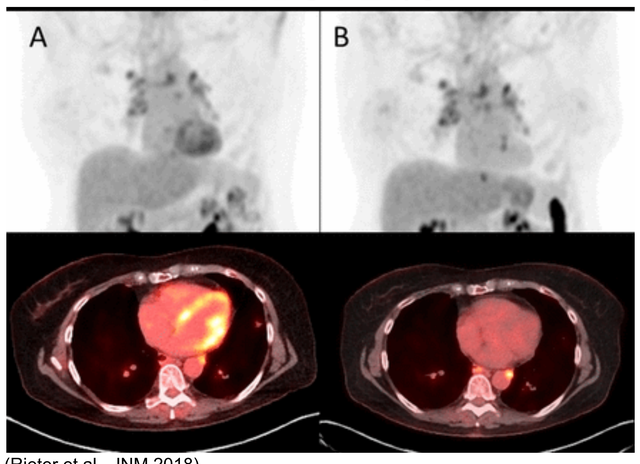
There must be clinical suspicion for CS which can be derived from EKG findings, lab tests, and imaging such as echocardiogram and cardiac MRI.

18F-FDG PET provides unique insights into active myocardial inflammation, which may help guide treatments with immunosuppressive therapy.

RESULTS



18F-FDG PET/CT



(Rieter et al., JNM 2018)

A) diffuse hypermetabolic activity in the left ventricular myocardium consistent with cardiac sarcoidosis.

B) resolution of myocardial activity following immunosuppressive therapy with persistent mediastinal and hilar nodes

The diagnosis of CS relies on a combination of clinical suspicion, electrocardiography, cardiac biomarkers, imaging modalities such as echocardiography and cardiac magnetic resonance imaging (MRI), and histopathological confirmation when feasible. However, the nonspecific clinical presentation of CS often mimics other cardiac conditions, leading to diagnostic challenges.

PET imaging offers promising diagnostic accuracy but may not be readily available in all ER settings. However, when CS is suspected, then the ER can consult with radiology to order the study to optimize patient care.

Diagnoses of CS in the acute setting may present as unexplained 2nd /3rd degree AV block, sustained ventricular arrhythmias, new heart failure, and syncope or sudden cardiac arrest. Lab tests may show elevated cardiac troponins, natriuretic peptides, and angiotensin-converting enzyme.

Imaging includes echocardiogram to evaluate wall motion abnormality, ventricular aneurysms, and reduced ejection fraction. If stable, patients may even pursue advanced imaging including cardiac MRI for late gadolinium enhancement patterns and 18F-PET CT to detect active myocardial inflammation.

CONCLUSION

PET/CT imaging appears to be a valuable tool for diagnosing cardiac sarcoidosis in the ER setting. Early recognition of CS in the acute setting may facilitate prompt initiation of appropriate management, thereby improving outcomes. Management of CS in the ER involves a multidisciplinary approach in the acute setting of arrhythmias and heart failure.

REFERENCES

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