1. Introduction

Cardiac resynchronization therapy (CRT) is an established therapy in patients with symptomatic heart failure and complete left bundle branch block (LBBB). This report describes two cases of cardiac sarcoidosis presenting with severe left ventricular dysfunction and LBBB. In both cases, treatment with immunosuppressive therapy led to not only improvement of symptoms and normalization of LV function, but also to the disappearance of the left bundle branch block. Timely diagnosis and management of CS obviated the need of CRT in these patients.

2. Case report

Two patients (Fig. 1), presented with worsening breathlessness (NYHA Class III) (6 and 9 months), complete left bundle branch block, and severe LV dysfunction. Baseline and serial changes in electrocardiographic and echocardiographic parameters of both patients are described in Fig. 1. In both patients, the coronary angiogram revealed normal epicardial coronary arteries. In view of new onset conduction disturbances and LV dysfunction, the patients were evaluated for an underlying inflammatory cardiomyopathy. 18Fluorodeoxyglucose PET-CT revealed increased uptake in the myocardium, mediastinal and supraclavicular lymph nodes. Subsequently lymph node biopsy revealed non-caseating granulomas suggestive of cardiac sarcoidosis (CS). Both patients received immunosuppressive therapy according to institutional protocol [1]. One patient had recurrence of heart failure symptoms after 1 year. On evaluation, she had a reappearance of left bundle branch block with severe left ventricular dysfunction. Repeat 18FDG PET CT showed increased uptake, suggesting a reactivation of CS. She was treated with corticosteroids and once a month intravenous cyclophosphamide therapy. On follow up of 60 and 36 months respectively, both patients are in NYHA Class I and have normal LV function and no bundle branch block.

3. Discussion

Conduction abnormalities have been widely documented in cardiac sarcoidosis. Although complete atrioventricular block is a common manifestation, isolated right bundle branch and left anterior hemiblock have also been documented [2]. In a retrospective series on cardiac resynchronization therapy in patients with CS, Sairaku and colleagues described complete left bundle branch block in six patients [3]. This is the first report of intrinsic left bundle branch block in CS that disappeared with only immunosuppressive therapy. Compared to patients with complete atrioventricular block with avid FDG uptake and no late gadolinium...
enhancement (LGE) that resolved following therapy, in patients with positive LGE in the basal septum the conduction abnormalities did not improve [4]. We postulate that the clinical course of left bundle branch block in CS may be similar in which early treatment (prior to scar formation) will lead to its disappearance. A higher index of suspicion is paramount for early diagnosis and initiation of immunosuppressive therapy in these patients. Furthermore, as shown in our second patient, inadequate treatment or a recurrence of disease may lead to the reappearance of the LBBB and LV dysfunction. A higher index of suspicion is required to make an early diagnosis of CS.

As suggested by guidelines, resynchronization therapy should only be recommended after evaluation and treatment of potentially reversible causes [5]. In both patients, early identification and initiation of treatment for CS led to complete disappearance of left bundle branch block and improvement of LV function. Both patients were Class IA candidates for CRT (Complete LBBB, QRS > 150 ms, EF < 30%) [5]. In the hypothetical scenario in which CS was not diagnosed in these patients, if they received CRT there could have been two possibilities. First, there could have been progressive deterioration of left ventricular function as a result of active disease leading to advanced heart failure therapies and possibly cardiac transplantation. The second possibility is that CS may have become quiescent, and the patient could have improved clinically and echocardiographically.

4. Conclusion

CS is a potentially reversible etiology in patients with non-ischemic cardiomyopathy that should be considered in appropriate situations prior to CRT implantation. Given the fact that CS can cause conduction abnormalities and progressive left ventricular dysfunction, an even higher index of clinical suspicion is necessary when evaluating patients with left or right bundle branch block and LV dysfunction. As these cases highlight if CS is identified early, immunosuppressive treatment can lead to not only improvement of left ventricular function but also disappearance of the left bundle branch block.

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Author contributions

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CS: Conceptualization, Editing.
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Declaration of competing interest

The authors declare that there is no conflict of interests.

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