

Septal flash as a predictor of cardiac resynchronization therapy response: A systematic review and meta-analysis

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Abstract

Background: Cardiac resynchronization therapy (CRT) in heart failure patients has been shown to improve patient outcomes in some but not all patients. A few studies have identified that septal flash on imaging is associated with response to CRT but there has yet to be systematic review to evaluate consistency of the finding across the literature. Methods: A search of MEDLINE and EMBASE was conducted to identify studies which evaluate septal flash and its association with CRT response. Studies that met the inclusion criteria were statistically pooled with random-effects meta-analysis and heterogeneity was assessed using the I^2 statistic. Results: A total of nine studies were included with 2,307 participants (mean age 76 years, 67% male). Septal flash on imaging before CRT implantation was seen in 53% of patients and the proportion of CRT responders from the included studies varied from 52% to 77%. In patients who were CRT responders, septal flash was seen in 40% of patients compared to 10% in those deemed to be CRT non-responders. Meta-analysis of the eight studies suggests that the presence of septal flash at pre-implant was associated with an increased likelihood of CRT response (RR 2.55 95%CI 2.04-3.19, $p < 0.001$, $I^2 = 51\%$). Septal flash was also reported to be associated with left ventricular reverse remodelling but the association with survival and symptomatic improvement was less clear. Conclusions: Septal flash is a well-defined and distinctive contraction pattern which is consistently associated with CRT response and should be evaluated when assessing for appropriateness of CRT device.

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