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Objectives To investigate the latent impact of cardiac resynchronisation therapy on TGF-β 1 signal pathway in Beagles with ischaemic cardiomyopathy.

Methods Twenty adult Beagles were divided into group A (CRT group) and group B (non-CRT group). All of them were chest opened and had heart failure after a ligature in the first diagonal branch. A left ventricular epicardial lead, a right atrium and a right ventricle leads together with the pacemaker were implanted. The pacing was started in group A after myocardial infarction, but was not started in group B. After 4 weeks of CRT, group A was divided into group C (CRT response group) and group D (CRT non-response group). Myocardial tissues were collected from the marginal area of myocardial infarction. The expressions of TGF-β 1, p-Smad2/3, and Smad2/3 in group B, group C, and group D were investigated, respectively.

Results The TGF-β 1, p-Smad2/3, and Smad2/3 were expressed at low levels in normal myocardial tissues. There showed a significant elevation of the expression of TGF-β 1, p-Smad2/3, and Smad2/3 at the marginal area of myocardial infarction after the first diagonal branch was ligatured. The expression of TGF-β 1, p-Smad2/3, and Smad2/3 in Group C and Group D were both higher than that in normal myocardial tissues. The collagen fibres of the marginal area of myocardial infarction in group C were significant less than that in group B or group D, meanwhile the expression of TGF-β 1, p-Smad2/3, and Smad2/3 in group C were also lower than that in group B and group D $p<0.05$).

Conclusions In the responders of Beagles with ischaemic cardiomyopathy, CRT can inhibit the expression of TGF-β 1, p-Smad2/3, and Smad2/3 and reduce the deposition of collagen fibres, which leads to the improvement of cardiac function.

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