Abstract: **P5383**

**Autologous adipose-derived stromal cell treatment for patients with refractory angina (MyStromalCell Trial) - 3-years follow-up results**

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**Background**

Improvements in medical and interventional therapies have transformed ischemic heart disease into a chronic illness for lot of patients. The disease is in progress and by time patients suffer from cardiac symptoms, reduced work capacity and decline in quality of life. Stem cell therapy is investigated as a treatment option for these patients.

**Purpose**

In this study, long-term safety and efficacy of autologous intra-myocardial injections of adipose-derived stromal cells (ASCs) were studied in patients with refractory angina.

**Methods**

Sixty patients were double-blinded 2:1 randomised to ASC or saline injections and followed for three years. The patients had significant angina due to ≥1 coronary artery stenosis but preserved left ventricular ejection fraction. ASCs were obtained from abdomen, ex vivo culture expanded and VEGF-A165 stimulated before delivery into the ischemic myocardium.

**Results**

The cardiac symptoms, CCS and NYHA classification, were significantly reduced in the ASC group during the three years follow-up period (2.5 ± 0.9 to 1.8 ± 1.2, P=0.002 and 2.4 ± 0.6 to 2.2 ± 0.8, P=0.007, respectively). However, no significant change was observed in CCS or NYHA in the placebo group during the follow-up period (2.5 ± 0.8 to 2.1 ± 1.3, P=0.186 and 2.7 ± 0.6 to 2.4 ± 0.8, P=0.314, respectively). Moreover, the number of weekly angina attacks reported was significantly reduced in the ASC group (P=0.017), but not in the placebo group (P=0.425).

For patients in the ASC group, the bicycle exercise time (383 ± 30s to 370 ± 44s, P= 0.052) and the exercise performance in watt were un-changed (81 ± 6 to 78 ± 10, P=0.123), but the performance in METs was reduced significantly (4.2 ± 0.3 to 4.0 ± 0.4, P=0.027) during the follow-up period.

At the same time in the placebo group, there was a significant decline in bicycle exercise time (437 ± 53s to 383 ± 58s, P=0.001), the exercise performance measured in watt (87 ± 12 watt to 80 ± 12 watt, P=0.019) and in METs (4.5 ± 0.4 to 4.1 ± 0.4, P=0.002).

In both groups, significant improved quality-of-life, angina stability, angina frequency and physical limitation score was observed but not for overall satisfaction score.

**Conclusion**

Patients receiving ASCs had improved cardiac symptoms during the three years follow-up period, which was
not the case for patients in the placebo group. Moreover, patients receiving ASCs had unchanged exercise capacity, in opposition to deterioration in the placebo group.