

P070 Isolation, Characterisation and Prospects For Use Of Endothelial Progenitor Cells To Repair Pancreatic Damage In Diabetes

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Endothelial progenitor cells (EPCs) in the bone marrow (BM) and peripheral blood (PB) contribute to tissue repair in various pathological conditions via the formation of new blood vessels. Previous studies indicate that diabetic patients have reduced EPC number and dysregulated EPC function, although their regenerative properties in diabetes are unknown. We wish to characterise and compare EPCs from pre-diabetic and diabetic non-obese diabetic (NOD) mice, a model of type 1 diabetes, in order to delineate their role in diabetes. We isolated BM and PB from pre-diabetic and diabetic NOD mice, in which the diabetic status was confirmed by measuring blood glucose levels (≥ 11.5 mmol/l). FACS analyses revealed a significant decrease in EPC number (CD31⁺, c-Kit⁺, Sca-1⁺, Lin⁻) in BM from diabetic compared to pre-diabetic mice (P-value: 0.021). Conversely, EPC number was significantly increased in PB from diabetic compared to pre-diabetic mice (P-value: 0.015). These preliminary data suggest that at the onset of diabetes, BM-derived EPCs are stimulated to enter the systemic circulation in response to signals from the pancreas. Our observations of increased EPC-derived lineages in the NOD mouse imply that circulating EPCs engraft within the pancreas. This latter observation is supported by many studies of BM-derived stem cell engraftment and contribution to neovasculogenesis in adult tissues, which is enhanced by increasing regenerative demand within a damaged tissue. EPCs thus could be a prospective source for transplantation to facilitate pancreatic repair and regeneration via neovasculogenesis