

An alternative approach of stem cell delivery to myocardium

Miyokard dokusuna kök hücre nakline alternatif bir yaklaşım

The case report by Nişancı et al. (1), published in this issues of the journal, evaluates intracoronary autologous bone marrow mononuclear (ABMMNC) cell therapy in a patient with ischemic cardiomyopathy (IC). Emerging cell-based therapies for end-stage cardiovascular diseases has gained great interest over the last decade.

One of the controversies for cardiac applications is the mode of delivery and cell survival within the target tissue (2). One of the major subjects discussed in the cardiac cell-based therapies is the path used for communicating the target tissue. Several studies reported different delivery methods including transepical, transendocardial, intracoronary or retrograde coronary sinus (3, 4). The investigators (1) preferred occluding the great cardiac vein while administrating the ABMMNCs via intracoronary route. They suggest that the distribution of the progenitor cells within myocardium is increased by using this method. Their rationale is logical but clinical evidence for better cell distribution remains hypothetical.

It has been recently shown that ABMMNCs isolated from patients with IC have a significantly reduced migratory and colony-forming activity in vitro and a reduced neovascularization capacity in vivo despite similar content of hematopoietic stem cells (5). Heeschen et al. (5) suggested that ischemic heart disease and/or the presence of cardiovascular risk factors contribute significantly to the functional impairment of ABMMNCs in patients with IC. Choosing the transepical implantation rather than intracoronary administration might overcome the problems of functionally impaired stem cells to extravasate against a chemo attractant gradient to invade and home to the ischemic tissue. Recently, Hou et al. (6) have evaluated the actual fate of delivered cells (intramyocardial versus intracoronary versus retrograde coronary venous) in an ischemic swine model. They demonstrated that the majority of the delivered cells were not retained in the heart, but distributed

to the visceral organs mostly to the lungs after each delivery modality. Future studies are encouraged to compare different delivery techniques in experimental models and then in the clinical arena for evidence-based medicine.

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