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Letter to the Editor

Platelet-rich plasma and myocardial regeneration

Dear Editor,

We read with great interest the article titled "Regenerative medicine in cardiovascular diseases – an update" by Cao et al[1]. The authors highlight an issue of great interest to cardiologists. The review article is focused on the current aspects of the regenerative medicine in cardiovascular diseases. The authors concluded that administration of angiogenesis-inducing growth factors is unsuccessful, presenting stem cells as the only novel regenerative therapy. However, is this the whole picture?

In order to answer this question, we performed a thorough search of the literature, which resulted in a significant number of studies regarding the emerging role of platelet-rich plasma (PRP) in myocardial regeneration[2-5].

PRP is an autologous fractionation of the whole blood that contains high concentrations of growth factors including vascular endothelial growth and is secreted by platelets in order to trigger the healing cascade[2,3].

PRP effectively restores blood flow by a significant increase in the number of capillaries (angiogenesis) as well as mature vessels (arteriogenesis)[2]. Growth factors such as VEGF, TGF-β, and PDGF-BB, have a significant effect as pro-angiogenic stimulators, which trigger angiogenesis, and myogenesis[2].

The effects of PRP in ischemic heart disease are well established in the literature. PRP increases formation of new vessels, reduces reactive oxygen species generation, stabilizes the mitochondria of the ischemic/reperfused heart and improves left ventricular performance and ejection fraction. Furthermore, PRP attenuates adverse cardiac remodeling, decreases infarct size, improves myocardial function and reperfusion, attenuates myocardial hypertrophy in the non infarcted region and facilitates angiogenesis and arteriogenesis in the infarct[2-5].

Neovascularization plays a significant role in post-ischemia regeneration and organ repair[2]. Experimental evidence has demonstrated the role of PRP in enhancing healing and angiogenesis mainly by reparative cell signaling[3-5]. We believe that the role of PRP in regenerative medicine deserves further experimental investigation and large-scale prospective randomized clinical trials.

Conflict of Interest

The authors declare no conflicts of interest.

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