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Role of Autologous Platelet Rich Plasma in Adult Scald Burns

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Abstract

Autologous Platelet Rich Plasma (APRP) and its clinical applications had drastically improved in the field of plastic surgery in the recent times. The efficacy of Autologous Platelet Rich Plasma (APRP) forburnsis widely seen to have reduced scarring effects. APRP is an increasingly popular adjunct in surgical, medical and aesthetic interventions. Their beneficial effects lie in their ability to deliver a high concentrate of growth factors. In this study we study the efficacy of APRP therapy in wound bed preparation of scald burns.

Keywords: APRP; Scaldburn; Wound bed preparation.

INTRODUCTION

Cataract Autologous Platelet Rich Plasma (APRP) is the platelet concentrate in small amount of plasma which contains higher concentrations of growth factors. It is rich in platelets, growth factors and chemokines.[1] Now a days it is widely studied for its role in scar reduction. It is prepared by centrifuging blood of patient. Blood is separated into 3 layers viz Platelet poor plasma (PPP) at top, PRP in middle and RBC at bottom. RBC and PPP are discarded sequentially. PRP obtained is added with thrombin. Here in this study, we are evaluating the effect of APRP in wound bed preparation in a patient with scald burns.[2]

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MATERIALS AND METHODS

This study was conducted in tertiary care centre in department of plastic surgery after getting the department ethical committee approval. Informed consent was obtained for examination and clinical photography. A 33 year female child with no known co-morbidities presented with alleged accidental scald burns due to hotwater fell on her over both the thighs and abdomen. She was taken to nearby hospital and was treated with analgesics and antacids, intravenous fluids. She was subsequently referred to JIPMER for further management. General and systemic examination was found to be normal. Second degree superficial burns were found over both the thighs and lower abdomen on local examination. The patient was treated with local injection of APRP (Fig. 1). Wound

bed preparation was done with the help of APRP and she subsequently underwent skin grafting (Fig. 2).

Autologous platelet rich plasma (APRP) obtained by standard double centrifugation protocol using 10cc of the patient's blood with APRP being injected over 2 sittings over 4 days.

RESULT

Autologous platelet rich plasma (APRP) helped in good wound bed preparation and helped in better uptake of skin grafting (Fig. 3).

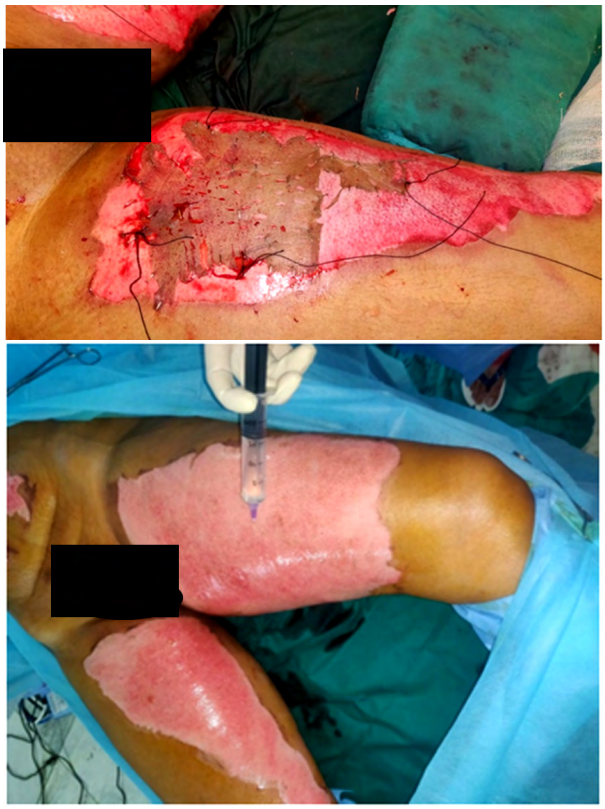

Fig. 1. Autologous Platelet Rich Plasma being injected into the scald burn for wound bed preparation

DISCUSSION

Autologous platelet rich plasma (APRP) as the name implies refers to the plasma derived from the patient's own blood with a platelet count higher than the platelet counts in the peripheral blood of the patient. Historically having been used to treat thrombocytopenia, the use in other specialties became widespread with its use in sports medicine to treat musculoskeletal injuries.[3] PRP is a platelet concentrate obtained by whole blood centrifugation.

Fig. 2. Scald burn after wound bed preparation with APRP

Platelets release a variety of growth factors after activation, such as transforming growth factor β, fibroblast growth factor, platelet derived growth factor, insulin like growth factor, epidermal growth factor, vascular endothelial growth factor, keratinocyte growth factor, interleukin-8, and so on. These growth factors promote and regulate cell proliferation, adhesion, differentiation, mitosis, angiogenesis, collagen synthesis and secretion through multiple channels to achieve the purpose of accelerating tissue repair. In addition, studies have shown that PRP has a pain relieving effect.

Burn wound is the main cause of bacterial infection in patients with severe burn. Burn wound leads to the disappearance of skin barrier and denatured necrotic tissue provides good conditions for bacterial reproduction, which result in wound infection. Once the infection occurs, it often accompanies the whole course of the disease, until the wound healed completely. Related studies have shown that PRP can significantly repair severe burn wounds, while it is effective in the treatment of tissue infections such as bone infection. Therefore, on one hand, the application of PRP in severe burn wounds can repair the wound and reduce the generation of bacteria; on the other hand, it can prevent the invasion and infection of bacteria, thus reducing the occurrence of wound infection.[4]

CONCLUSION

Autologous platelet rich plasma is an effective measure wound bed preparation and enhancing the uptake of skin graft. It is a good choice for treating scald burns provided the patient has a good functional status and surface area to be treated is small.

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