Successful Treatment of Haemoglobinopathy Associated Chronic Leg Ulcer with Platelet Rich Plasma

Sir,

Chronic leg ulcers are the 'below knee' ulcers which fail to heal after 3 months. They affect about 1% of middle aged or elderly population and are usually of vascular aetiology, which may be venous, arterial, or mixed.\(^1\) Haemoglobinopathies are a rare cause of leg ulcer in young patients, including sickle cell anaemia, thalassemia, and hereditary spherocytosis (HS). HS is a familial heterogenous disorder caused by a genetic defect in \(\alpha\) or \(\beta\) spectrin, which is an important protein component of cytoskeleton of red blood cells. Clinically manifested by anaemia, intermittent jaundice, and pigmented gallstones, indolent leg ulcers are an infrequent complication of HS seen in less than 2% of patients.\(^2\)

Chronic leg ulcers present a therapeutic challenge to physicians, as they show a very poor response to conventional methods of treatment like debridement, antibiotics, and wound dressings. Only 30 - 50% ulcers respond to conventional methods and the healing time of ulcer is about one year, which increases morbidity of patients and financial costs. There are literature supporting good response to treatment with platelet rich plasma (PRP) of venous and diabetic ulcer.\(^3\)

A 20-year girl suffering from HS since childhood presented to us with a non-healing leg ulcer of 8 months duration. On examination, there was an oval ulcer about 10 cm in size on lateral aspect of left leg about 5 cm above lateral malleolus (Figure 1). The floor of ulcer was covered with necrotic slough with pus oozing out. Surrounding skin showed hyperpigmentation and was of leathery texture. Peripheral neurovascular status was intact. Doppler studies were normal. Previously ulcer had been treated with antibiotics, debridement, and dressings; but it failed to show any response. After debridement of ulcer, we treated it with PRP. About 40 ml of venous blood was drawn and centrifuged, plasma and buffy coat was taken with mean platelet concentration of 1,000,000 lac and was activated with calcium chloride and perilesional and intralesional injections were given in the ulcer. This was repeated every 2 weeks. Ulcer size was measured at each visit. The ulcer healed completely after 12 weeks (Figure 2 and 3).

In 1902, Barlow and Shaw reported the first leg ulcer associated with HS. Minor trauma may initiate an ulcer which fails to heal as a result of anaemia, poor local blood supply, venous congestion, infections, and...

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**Figure 1:** Leg ulcer before treatment.

**Figure 2:** Leg ulcer after 3 sessions of platelet rich plasma treatment (week 6).

**Figure 3:** Healed leg ulcer after completion of PRP(week 12).
congestive heart failure. Owing to decreased vascular supply, these ulcers are very slow to heal and significantly increase pain and disability of the patient. PRP is a relatively new treatment approach for stubborn chronic leg ulcers. Platelets are taken from autologous plasma and are rich in growth factors which include platelet derived growth factors (αα, αβ, ββ), fibroblast growth factors, vascular endothelial growth factors, transforming growth factors, and epidermal growth factors, insulin like growth factors, thrombospondin and osteonectin. They exert their effect in autocrine and paracrine manner to stimulate progenitor cells, to promote production of extracellular matrix, trigger cell division, and increase chemotaxis of macrophages which promote healing. They also increase angiogenesis and suppress cytokine production. About 70% of these growth factors are released once the platelets are activated with calcium chloride within first 10 minutes, so PRP should be injected immediately after activation. To the best of our knowledge, this is the first case report of successful healing of HS associated leg ulcer with PRP.

REFERENCES


