Journal of Pakistan Association of Dermatologists. 2022;**32(1)**:206-209.

Case Report

Treatment of pyoderma gangrenosum with platelet rich plasma: A case report

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Abstract Pyoderma gangrenosum is uncommon, non-infectious, ulcerative Skin condition, rapidly progressive in size and extremely painful. Thirty to fifty percent cases are associated with underlying systemic disease. Platelet rich plasma (PRP) offers an effective treatment possibility for therapy resistant pyoderma gangrenosum. Here we present a case of 11-year old female who did not respond sufficiently to the conventional treatment i.e. prednisolone and azathioprine but underwent complete remission after PRP therapy.

Key words
Pyoderma gangrenosum, Platelet rich plasma (PRP).

Introduction

Pyoderma gangrenosum is a rare reactive neutrophilliic disorder of uncertain etiology characterized by painful rapidly progressive ulcer involving the skin.[1] Initial lesion may be papule, plaque, blister depending upon its variant. It is a diagnosis of exclusion by ruling out of other causes of similar cutaneous ulcers like, infection, malignancy, venous insufficiency, vasculitis, vasculopathy, diabetes, trauma and collagen vascular disease. Pathergy has main role in the formation of new ulcer.[2]

Systemic corticosteroids in combination with immunosuppressive agents, local wound care are the mainstay of treatment for pyoderma gangrenosum. Their long term use is associated with adverse effects and complications which contribute to morbidity and mortality of the disease. Alternative treatments options used for these patients are pulse administration of high-dose steroids or cyclophosphamide, plasmapheresis, photopheresis, intravenous immunoglobulins, mycophenolate mofetil and immunoabsorption.[3]

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Platelet rich plasma (PRP) is a volume of autolougus plasma derived from whole blood, centrifuged to remove red blood cells. It has platelet concentration above baseline i.e. 5 times more than baseline. The paletlets have alpha granules that releases multiple growth factors thus promoting wound healing[4]. Growth factors are important in modulating mesenchymal cell recuirment,proliferation and extracellular matrix synthesis during healing process.[4] Therefore, PRP has been reported to be beneficial in treating pyoderma gangrenosum.

Case report

A 11-year-old female having history of recurrent ulcers of pyoderma gangrenosum for the last 6 years. She presented to us with a single ulcer on the posteromedial aspect of left leg i.e. 8cm from medial maleolus. At first she developed a pustule 6 months ago at the mentioned site that

Figure 1 Before PRP.

Figure 2 After PRP (14 days after 1st cycle)

Figure 3 1 week after 2nd cycle

Figure 4 2 weeks after 2nd cycle.

ruptured and resulted in a ulcer. The ulcer rapidly increased in size, also associated with severe pain and itching. Ulcer was irregular in shape and had sloping margins. Ulcer charting done, ulcer was approximately 7cm (L) long, 5cm (W) wide and 1cm (D) in depth, having heamorrhagic crust at base, with oozing of blood and pus. There were excoriation marks on surrounding skin. She had previous one admission with the same condition in Tertiary care hospital. She remained disease free for last 1½ years while taking azathioprine. Previous ulcers were also at the same site and healed with cribriform scarring. There was no history of trauma or pathergy or any systemic disease. Treatment started with steroids (40mg of prednisolone), azathioprine, pain killers and local wound care. Systemic antibiotic given for infection. There was no significant change in ulcer size for 3 weeks inspite of given systemic steroids. She had developed cushingoid features and Liver function tests were also deranged. As the ulcer was resistant to treatment given i.e. steroids and azathioprine and the level of pain was still same so we decided to treat the ulcer with autologous platelet rich plasma (PRP).

After informed consent from the patient and her parents, 10ml of venous blood was withdrawn and transferred to vials containing acid citrate. Two cycles of centrifugation were done. 1st cycle at 2500 RPM for 10 min and 2nd cycle 3000 RPM for 15 min. Upper 2/3rd portion of vial that contain platelet depleted plasma separated. Remaining platelet rich plasma was transferred in insulin syringes. Total 2cc of PRP was injected along side of healed margins and at granulation tissue at a distance of 1cm in whole ulcer giving upto 1-2 units at a single injection site. Remaining 1cc was painted on the ulcer site and at the end ulcer was covered with the guaze piece soaked in platelet depleted plasma. Same procedure was repeated after 2 weeks interval.

Patient continued oral steroids, azathioprine 50mg and multivitamins along with the PRP treatment.

Discussion

Pyoderma gangrenosum often results in recurrent ulcers and treatment is prolonged with oral corticosteroids and immunosuppressants having serious side effects. Some cases even do not respond. There is no universely accepted "Gold Standard" treatment for it.[5]

Platelet rich plasma is an autologous conditioned plasma, rich in growth factors, platelet concentrate. Patient's blood is collected and centrifuged at different speeds to separate in 3 different layers: red blood cells, platelet poor plasma (PPP) and platelet rich plasma (PRP). Two spins are done usually. First spin (Hard Spin) separates PPP from red fraction and PRP. Second spin (Soft Spin) separates red fraction from PRP. It has been used to encourage healing and reduce inflammation.[6] PRP has been successfully used in dermatology to treat alopecia, acne scars, skin rejuvenation, skin ulcers.[7]

Treatment guidelines recommended PRP as third line treatment option for pyoderma gangrenosum.[8] A case repot done by M A Alvarez-Lopez *et al*.[4] used PRP soaked calcium alginate dressing in contrast to intralesional injection to avoid pathergy phenomena. Treatment was once weekly for 6 weeks, by the end of treatment ulcer size was reduced more than 50% and pain disappeared.[4]

In the treatment of pyoderma gangrenosum, no standard protocol for PRP is present.[7,9]

Adverse effects of intralesional PRP includes: pain and erythema which are usually mild and can be contolled by painkiller or local anesthesia. Intralesional injection of PRP at the bed and edges of wound results in minimal risk of plasma loss. Regular monitoring of ulcer and change of dressing can easily be done.[10]

In our patient, two cycles of PRP therapy done together with conventional immunosuppressive treatment resulted in remarkable clinical improvement. No side effect of PRP was seen in our patient.

However, more studies should be done on more number of patients to see efficacy of PRP in pyoderma gangrenosum.

Conclusion

In our case report, pyoderma gangrenosum was treated successfully with two sessions of intralesional PRP therapy. The clinical improvement was associated with decrease in the dose of corticosteroids and immunosuppressants without any side effects. PRP appears to be a promising new treatment modality for pyoderma gangrenosum because of its high efficacy in treating resistant cases and its minimal short-term side effects.

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