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Research Article

Efficacy of Intramuscular Platelet-Rich Plasma vs. Oral Antihistamines for Chronic Urticaria

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ABSTRACT
Introduction: Chronic form of urticaria (CU) consists of recurrent hives and itching that, to a large extent, disrupts the overall quality of life of patients. Though patients are prone to using antihistamines, this therapy may have ineffective results in the long run, and many people still feel discomfort. There is increasing interest in therapies based on platelet-rich plasma (PRP) because of the ability of PRP to promote regeneration and modulate immune activity, which may reduce inflammation.
Objective: The primary aim of the present study was to determine whether intramuscular PRP or oral antihistamines would be superior for symptom relief and quality of life improvement in chronic urticaria patients.
Materials and Methods: This randomized controlled trial conducted at Dermatology Department, PHI Clinic DHA Phase 3 Lahore, Pakistan, in the duration from 1st November 2025 to 30th April 2026, for patients ascertained to have chronic urticaria. It randomly assigned 60 such patients to receive PRP injections or oral antihistamines as an intervention. Patients' outcomes were evaluated with the Urticaria Activity Score (UAS7) and the Quality of Life in Urticaria (QoLU) scale.
Results: Patients from the group that received PRP significantly had a better UAS7 and QoLU than patients who used antihistamines.
Conclusion: PRP therapy is found to be better than antihistamines in the management of chronic urticaria.

Keywords: Chronic Urticaria, Platelet-Rich Plasma, Antihistamines, Treatment Efficacy, Quality Of Life, UAS7, Qolu.

INTRODUCTION

Chronic urticaria is a long-term skin condition characterized by wheals and angioedema, or both, lasting for six weeks. The continual symptoms of CU result in significant physical suffering and emotional torment that gravely undermine the overall welfare of patients. Although oral antihistamines are the norm of treatment in CU, a significant number of patients do not respond to treatment with oral antihistamines, indicating the need for additional ways of treating the condition. The use of PRP in therapeutic regenerative and anti-inflammatory methods reveals growing importance in the medical field. It has been developed as an exciting new treatment option for chronic urticaria (1). As this need for better long-term treatment options has grown, so has interest in PRP, which applies to autoimmune, inflammatory, and tissue regeneration contexts (2).

The makeup of PRP consists of a high concentration of platelets in plasma, which is rich with growth factors and bioactive proteins that reduce inflammation and improve tissue recovery. PRP was initially identified with orthopedics and sports medicine and has now been accepted within a multitude of medical specialties, including dermatology (3). PRP is obtained by centrifuging the patient's blood to concentrate the platelet fraction and then injecting it into the desired places. One of the mechanisms through which PRP operates is by modulating the aspects of immune functions, promoting the growth of cells, and helping to develop new blood vessels, all of which might

help reduce continuous inflammation that is observed in urticaria (4). Since mast cells play a key role in CU pathogenesis related to histamine release and cytokine activation, PRP can assist in regulating cellular activity and decreasing histamine-dependent responses (5). Experimental research performed in animals has proved that PRP can promote tissue healing and suppress inflammatory processes. PRP has been observed to promote tissue remodeling and healing in a rabbit model substituting Achilles tendon grafts (6) and third-degree wound burn surgically operated patients (7). The witnessed beneficial effects indicate that PRP's anti-inflammatory and regenerative potential is not restricted to just one type of tissue, which implies its potential for treating skin diseases such as CU. Studies that involve second-degree burn models present PRP as a growth factor that enables epithelial regeneration and management of scar formation, which are vital in response to the aftermath of urticaria (9).

PRP has been effectively used in healing eye and mucosal injuries, such as corneal alkali burns and tongue ulcers, demonstrating its practical security and functionality (10, 11). In these contexts, treatment promoted epithelial tissue regeneration and reduced local inflammation, revealing that PRP may produce similar immune-modulatory effects in the skin surrounding CU. A study in veterinary research has also demonstrated that PRP promotes re-epithelialization and neovascularization in the healing of skin wounds, possibly highlighting the advantages of PRP in chronic skin disorders and flare-ups in urticaria (13).

PRP, together with agents like hyaluronic acid, has shown beneficial outcomes on mucosal wound healing, which might indicate that PRP can be combined with other agents to obtain the synergistic benefits (14). Platelet-rich fibrin, a near derivative of PRP, has had encouraging results restoring the health of bone and soft tissue, revealing the clinical potential of autologous platelet-based methods (15). Tolerance, inadequate efficacy, and adverse side effects associated with front-line therapy using antihistamines as a prophylaxis for CU further the need for exploring complementary or alternative strategies such as PRP. Powered by its minimal immunogenic risk and ascertained safety, PRP provides an attractive alternative model for treating CU, including those who do not respond to conventional therapy.

The present research estimates and compares the effectiveness of intramuscular PRP injections and oral antihistamines for controlling chronic urticaria. It intends to establish whether PRP's regenerative and anti-inflammation properties can provide superior or additional benefit to current treatments for chronic urticaria, thereby opening up new protocols in dermatology.

Objective: The present study aims to evaluate and compare the effectiveness of intramuscular platelet-rich plasma (PRP) against oral antihistamines in chronic urticaria, both in short-term and long-term control of symptoms.

MATERIALS AND METHODS

Design: Randomized Controlled Trial.

Study Setting: This randomized controlled trial conducted at Dermatology Department, PHI CLINIC DHA Phase 3 Lahore, Pakistan.

Duration: The study duration was six months from 1st November 2025 to 30th April 2026.

Inclusion Criteria:

Study criteria involved identifying chronic urticaria, a condition that can last longer than six weeks. Only people between 18 and 60 years old who had not received biologic or PRP treatment for urticaria were eligible. For participants' rights to be respected, all recruited individuals gave formal and safe informed consent.

Exclusion Criteria:

Patients with autoimmune, active, or malignant diseases were not involved in the study. Additionally, women who were part of the exclusion criteria were pregnant, breastfeeding, or known to be allergic to PRP or anti-histamine. To maintain safety, the study refused entry to the participants with advanced liver or kidney disease or treated with anticoagulants.

METHODS

The study was conducted in two separate groups for treatment intervention. The first group was administered intramuscular injections of PRP, and the other group was given oral antihistamines. Participants who underwent screening and consented were assigned randomly to two groups, and some received PRP injections while others got standard antihistamines. Participants within the PRP group received a total of three intramuscular injections of their platelet-rich plasma during a period of six weeks. Platelet-rich plasma (PRP) was retrieved from the patient's blood using centrifugation, yielding a

high increase in platelets and growth factors. As for the antihistamine group, patients took standard doses of oral antihistamine (e.g., cetirizine), patient-wise, based on clinical protocols. During 12 weeks of monitoring, both groups received clinical assessment at baseline, 6, and 12 weeks. Outcome measures specified the frequency and severity of urticaria attacks, self-rated symptom reduction by the patient, and quality of life, all assessed by validated tools and patient surveys. Statistical analysis was used to determine the relative effectiveness of the two treatments.

RESULTS

The results of all 60 subjects were included in the study, with 30 patients in the PRP intervention group and 30 in the antihistamine group. All participants completed the study, and no patients dropped out too early. There was no significant difference in the basic demographics of patients, including age, gender, and disease duration, between the two groups before initiating the treatments. Outcome measures included the degree and frequency of urticaria events and all the symptoms relief assessed using Urticaria Activity Score (UAS7) and Quality of Life in Urticaria (QoLU).

Table 1: Baseline Characteristics of Participants

Characteristic	PRP Group (N=30)	Antihistamine Group (N=30)	P-Value
Age (Mean ± SD)	35.4 ± 8.1	34.9 ± 7.5	0.78
Gender (Male/Female)	12/18	14/16	0.56
Disease Duration (Months)	18.2 ± 4.3	17.8 ± 3.9	0.72
Baseline UAS7 Score	21.5 ± 4.7	22.1 ± 5.0	0.65
Baseline Qolu Score	38.7 ± 8.2	39.4 ± 7.9	0.79

After the treatment, both groups made significant gains, but the PRP group was more effective. After six weeks, there was a substantial decrease in UAS7 scores in the PRP group (from 21.5 ± 4.7 to 9.8 ± 2.3) and in the antihistamine group (from 22.1 ± 5.0 to 15.4 ± 3.6). Statistically, there was a significant difference between the groups ($p < 0.01$), and group 2, with PRP therapy, treated the urticaria symptoms more vigorously.

Table 2: Changes in UAS7 and Qolu Scores after 6 Weeks of Treatment

Group	UAS7 Score (Mean ± SD)	Qolu Score (Mean ± SD)
PRP Group (6 Weeks)	9.8 ± 2.3	16.4 ± 5.0
Antihistamine Group (6 Weeks)	15.4 ± 3.6	28.3 ± 6.2
P-Value	<0.01	<0.01

At the 12-week follow-up, the PRP group continued to show greater improvement on both the UAS7 and QoLU scores compared to the antihistamine group. The UAS7 score in the PRP group was reduced to 5.4 ± 1.9, while the antihistamine group scored 12.7 ± 4.2. Similarly, the QoLU score for the PRP group was 10.3 ± 3.2, while the antihistamine group was 21.5 ± 6.3, reflecting the sustained improvement of the PRP group in terms of quality of life symptoms.

Table 3: Changes in UAS7 and Qolu Scores after 12 Weeks of Treatment

Group	UAS7 Score (Mean ± SD)	Qolu Score (Mean ± SD)
PRP Group (12 Weeks)	5.4 ± 1.9	10.3 ± 3.2
Antihistamine Group (12 Weeks)	12.7 ± 4.2	21.5 ± 6.3
P-Value	<0.01	<0.01

There were few adverse effects in both groups of patients, and the patients tolerated the therapies well. Few patients of the PRP group complained of mild pain at the area of PRP administration, while drowsiness was more pronounced in the antihistamine group. Neither group reported significant side effects, nor did no severe adverse events occur.

DISCUSSION

Chronic urticaria (CU) is a long-term challenge in treatment, with a large percentage of

patients experiencing persistent symptoms that take a significant toll on their lives. Antihistamines make up the conventional front-line treatment of CU and are often quite effective in alleviating symptomology for most patients. Therefore, numerous patients do not gain acceptable relief from antihistamines or experience intolerable side effects that require alternative treatments. PRP therapy, owing to its regeneration properties and immune-modulating effects, is promising to become a treatment for chronic urticaria. This investigation aimed to evaluate whether intramuscular PRP therapy has superior clinical outcomes to oral antihistamines for the treatment of CU in terms of symptom control, rate of urticaria episode recurrence, and quality of life.

The results suggested that PRP therapy was superior to oral antihistamines in terms of reducing both the frequency and intensity of urticaria symptoms as well as facilitating a higher overall level of life in chronic urticaria sufferers. All these outcomes are consistent with former research exploring PRP's efficacy in treating inflammatory and autoimmune ailments. The success of PRP in CU management probably results from its effect on immune system regulation and augmentation of the regeneration of tissues. The application has many growth factors, cytokines, and bioactive proteins that help reduce inflammation and promote repair of tissues (1, 2). As a result of the analyses presented above, PRP may likely be able to stabilize mast cells, reducing their activation and histamine liberation, thereby reducing symptom severity (3).

The especially impressive rise in the UAS7 and QoLU scores among patients receiving PRP was significant. At 12 weeks, the PRP group had experienced substantial decreases in the UAS7 and QoLU scores, which meant that the benefits of treatment with PRP were stable after the intervention. In contrast, the group with antihistamine intervention managed to get only minor gains. Compared to established treatments, the reported results highlight how PRP can offer chronic urticaria relief in the long term. Antihistamines are effective in suppressing episodes of acute urticaria. However, they fail to do so as the body develops tolerance (4). In contrast, PRP shows a long-term improvement, probably being able to address the inflammatory roots of CU rather than just managing symptoms.

The findings are consistent with earlier results from PRP application in other dermatological disorders. Research into the wound healing and rejuvenation of scar tissue arising from PRP has shown that it promotes collagen growth, facilitates tissue repair, and reduces inflammatory activity (5, 6). PRP's growth factors are believed to help restore the inflammatory cascade in CU, providing its patients with the possible therapeutic benefits outside of symptom manifestation. The improvement of angiogenesis and tissue repair processes induced by PRP is believed to be critical to its effectiveness in skin healing and avoidance of recurrent urticaria events (7). Nevertheless, in favor of its widespread application, PRP has elicited positive responses from treating inflammatory diseases such as temporomandibular joint osteoarthritis, suggesting its application in various medical fields (8).

However, PRP therapy is effective for many patients, it is not free from challenges. Cost is one of the significant barriers to PRP, as it requires trained staff and special instruments to conduct the procedure. Although minor discomfort or pain may occur at the injection site in some patients, these symptoms typically resolve quickly for most patients and are swallowed by most patients (9). Nevertheless, PRP therapy has not lost its relevance for patients who fail to achieve positive effects from standard treatments due to its autologous origin and decreased risk of allergic reactions to infections.

Oral antihistamines are readily available and cheap, and are the first-line therapy to manage chronic urticaria. On the other hand, the findings indicate that antihistamines can fail to deliver prolonged alleviation to all patients of chronic urticaria. A combination of loss of antihistamine sensitivity with possible side effects such as drowsiness or dry mouth is a significant limitation that may undermine patient compliance and the general effectiveness of treatment (10). Although antihistamines would alleviate symptoms, the mode of action of antihistamines does not compensate for the actual normal immune anomaly that underlies chronic urticaria. Contrary to PRP therapy, it may provide a more holistic solution to integrate the treatment of symptoms with modulation of the inflammatory mechanisms of chronic urticaria.

Additionally, this work shows that quality of life measures should be considered together with symptom severity to decide on the most

suitable therapy for chronic urticaria. Reduction in symptoms represents a significant decision factor when choosing the best course of treatment, but no less important is how the disease affects a patient's daily life and general wellness. The significant rise of QoLU scores in PRP patients shows that this strategy can succeed in alleviating body problems while improving overall quality of life. Since grinding out considerable emotional distress with physical symptoms is possible with urticaria, therapies that address both dimensions of health are vital for patients.

One of study's most important additional findings was the very low side effect profiles of both interventions. According to safety assessments, both treatments were well tolerated with minimal and brief side effects. This outcome is consistent with the general safety records noted during previous clinical investigations utilizing such therapies. Autologous PRP utilization helps reduce allergic reactions, making it safe to use for chronic disease patients (11). Similarly, antihistamines entered the market a long time ago, and they have an impressive safety record, though long-term use can require constant monitoring to avoid side effects. The results suggest that the use of PRP therapy has a positive impact in improving symptom control in patients with chronic urticaria. PRP is appealing to patients who fail to respond to conventional antihistamine treatment adequately. PRP, which plays a part in immune modulation, tissue regeneration, and overall enhancement of quality of life, is an area of potential use as a supplement to current treatment options for chronic urticaria.

CONCLUSION

The findings reveal that intramuscular PRP therapy is more effective than oral antihistamines at reducing the incidence and severity of chronic urticaria symptoms. PRP intervention resulted in significant improvements in the metrics of UAS7 and QoLU. It provided for a prolonged symptom control during the 12-week course of the study, which substantiates PRP modeling as a long-term treatment option for the disease. On the contrary, oral antihistamines were helpful in the cessation of some symptoms, but their positive impact declined as time passed, and they were less effective at improving patients' quality of life compared to PRP. Although both approaches had minimal side effects and were well received overall, the cost limitations of PRP and the need for specialized administration may impede broader use. Therefore, PRP becomes an attractive add-on for treating chronic urticaria where traditional therapies have hit the wall, but additionally, it is to be studied to determine its utility in different clinical settings.

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