International Journal of Research in Dermatology
Patel B et al. Int J Res Dermatol. 2018 May;4(2):246-249
http://www.ijord.com

DOI: http://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20181828

Original Research Article

A study of autologous serum skin test and autologous serum therapy in chronic urticaria

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Received: 03 March 2018
Revised: 29 March 2018
Accepted: 02 April 2018

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ABSTRACT

Background: Chronic urticaria (CU) is a vexing problem and patients suffer from the morbidity that arise from irritable itch and wheals and are also subjected to a huge antihistamine pill burden. A subset of patients with CU may have an autoimmune basis for their condition, as shown by a positive skin test to ASST. The objective of the study was to compare efficacy of AST in ASST positive and negative patients and its impact on dermatology life quality index (DLQI) in patients, before and after AST.
Methods: A prospective, interventional study was conducted in the Department of dermatology (Skin) OPD of our institute from October 2016 to October 2017. Fifty patients were selected randomly and antihistaminics were withdrawn before ASST. Test was performed in all patients and AST was given for 9 weeks in both (ASST positive & negative) groups, along with tablet levocetrizine on demand basis and followed for 4 weeks after completion of 9 weeks of therapy. Total severity score (TSS), urticaria activity score (UAS), dermatologic life quality index (DLQI) were used as primary effective parameters and were recorded at baseline and weekly after each injections of AST.
Results: UAS and TSS showed significant improvement (>50%) after 5th week in both group patients. DLQI showed higher improvement in ASST positive patients.
Conclusions: We found significant improvement in ASST positive and ASST negative patients but ASST positive patients required more time to experience the benefit of AST.

Keywords: Autologous serum skin test, Autologous serum therapy, Autoimmune urticaria, Urticaria activity score, Total severity score, Daily quality life index

INTRODUCTION

The word urticaria is derived from the Latin word "*urtica*" which refers to the stinging nettle plant, now known to contain histamine.[1] Chronic urticaria (CU) is a common skin disorder affecting at least 0.1% of the population which is defined as the recurrent occurrence of short lived wheals with or without angioedema, three times or more per week, for more than six weeks.[2] Historically, in 1986, Grattan et al. were the first to use autologous serum skin test (ASST) to differentiate autoimmune urticaria from chronic idiopathic urticarial.[3] The etiology of CU is heterogeneous. In the last consensus meeting for the guidelines, the term "spontaneous" was added to the previous term 'chronic urticaria', or "chronic idiopathic urticaria", to emphasize that wheals develop spontaneously, independent of external stimuli, which is conceptually helpful, and does not imply knowing or not-knowing the cause. Autoimmune chronic urticaria demonstrate circulating histamine-releasing IgG autoantibody against the high affinity IgE receptor FcεR1α on dermal mast cells and

basophils or less commonly to IgE itself.[4] Autoimmune chronic urticaria is diagnosed by ASST that nearly constitutes 20-35. A study by Debbarman et al had showed autologous serum therapy (AST) to be a promising therapy in treatment of urticaria regardless of the ASST status (ASST positive or ASST negative).[5] CU is a vexing problem and patients of CU suffer from the morbidity that arise from irritable itch and wheals and are also subjected to a huge antihistamine pill burden.[6] Search for newer effective modalities which reduce pill burden is needed.

Aims and objectives

- To compare efficacy of AST in ASST positive and ASST negative patients.
- To assess the impact of AST on dermatology life quality index (DLQI) in patients, before and after therapy.

METHODS

A prospective, interventional study was conducted in the Department of Dermatology OPD of our institute from October 2016 to October 2017. Fifty patients were included in our study.

Inclusion criteria

Inclusion criteria was all patients above 18 years of age with refractory CU.

Exclusion criteria

Exclusion criteria were CU due to predominantly physical causes; pregnancy and lactation; patients with severe systemic illness; patients on anticoagulation therapy; patients on corticosteroids or immunosuppressive therapy; patient not willing to get enrolled.

Detailed history and examination was documented in structured proforma. Routine and specific laboratory tests (thyroid function test, stool for ova) were performed along with ASST of 50 cases. Antihistaminics were withdrawn before 48 hours of test. After taking written consent, the test was perfomed in all patients and AST was given to them regardless of their ASST status (2ml autologous serum i.m. in gluteal region once weekly for 9 consecutive weeks). Tablet levocetrizine (10mg) was given to patients in both study groups and they were instructed to consume them on demand basis (experiencing whealing or itching) but not more than 1 tablet per day and were followed for 4 weeks after 9 injections of AST. Urticaria activity score (UAS), total severity score (TSS), dermatologic life quality index (DLQI) were used as primary effective parameters and recorded at base line and weekly after each injection of autologous serum therapy. Four cases were lost in follow up which were not included in results. ASST was considered positive when the average of two perpendicular diameters of the wheal was ≥ 1.5 mm more than the saline wheal.

Urticarial activity score (UAS) which measure two symptoms, number of wheals (0-3 scale per day) and intensity of pruritus (0-3 scale per day) is given in Table 1.[7]

Urticaria Activity Score (UAS) = Wheal score + Pruritus score.

Total severity score (TSS) is given in Table 2.[8]

Table 1: Urticarial activity score (UAS).

Score	Wheal	Pruritus
0	None	None
1	Mild (<20 wheals/24 hrs.)	Mild (present but not annoying or troublesome)
2	Moderate (20-50 wheals/24 hrs.)	Troublesome but does not interfere with sleep
3	Intense (>50 wheals/24 hrs. or large confluent areas of wheal)	Severe pruritus, which is sufficiently troublesome to interfere with normal daily activity or sleep

Table 2: Total severity score (TSS).

Parameter	0	1	2	3
Number of wheals	None	<10	11-50	>50
Size of wheals	None	<1 cm	1-3cm	>3 cm
Intensity of pruritus	None	Mild	Moderate	Severe
Duration of persistence	None	<1 hr	1-12hr	>12 hr
Frequency of appearance	None	<Once or once a week	2-3times a week	Daily
Frequency of antihistamine use	None	<Once or once a week	2-3 times a week	Daily

Clear (TSS=0), Mild (TSS= 1-6), Moderate (TSS = 7-12), Severe (TSS= 13-18).

Dermatology life quality index (DLQI)

Quality of life in urticaria patients were assessed by a validated vernacular (Gujarati) version of dermatology life quality index (DLQI) (http://www.dermatology.org.uk/downloa ds/DLQI_Gujarati.pdf) which consist of ten questions, each scored between 0-3. Scoring was done in each patients after the AST to assess the improvement of quality of life (QoL) after therapy.

RESULTS

A total of 46 cases, 24 were female and 22 were male. Maximum number of patients i.e.35 (70.08%) belonged to age group of 20-40 years with age ranges from19 to 60 years. Family history of similar complaint was present in 1 (2.17%) patient. ASST was positive in 25 (54.32%) patients (group A) and negative in 21 (45.65%) patients (group B). History suggestive of atopy was present in (3/25) 12% of group A patients and (1/21) 4.76% of group B patients. Allergy to sour food was found in (4/25) 16% of group A patients and (2/21) 9.52% of group B patients but after complete elimination of sour food from diet neither group of patients showed improvement in our study. Association with angioedema was present in (7/25) 28% of group A patients and (3/21) 14.28% of group B patients. Altered Thyroid function test was seen in (3/25) 12% of group A patients and none of group B patients. Observed baseline and weekly parameters (UAS, TSS and DLQI) in both groups are given in Table 3. After 9 weeks of therapy, patients were followed up for 4 weeks in which we observed that 75.0% of Group A patients and 67.8% of Group B patients remained completely asymptomatic with regards to urticaria symptoms.

Table 3: Baseline and weekly data of UAS, TSS and DLQI.

Sr. no	UAS		% improvement in UAS		TSS		% improvement in TSS		DQLI		% improvement in DQLI	
	ASST+	ASST-	ASST+	ASST-	ASST+	ASST-	ASST+	ASST-	ASST+	ASST-	ASST+	ASST-
BL	5.0	4.5	-	-	14.56	13.6	-	-	17.50	14.10	-	-
1.	5.0	4.5	13.40	20.80	14.56	13.6	0	0	17	14.00	20.50	12.25
2.	3.5	3.5	36.65	33.40	11.2	9.10	24.86	21.50	11.50	9.00	28.75	38.59
3.	3.5	1.5	41.65	56.60	9.30	8.33	34.54	36.50	8.50	6.50	41.65	48.30
4.	3.0	1.5	62.50	64.25	6.40	5.50	55.62	60.25	7.54	4.50	60.80	64.25
5.	1.5	1.5	67.25	67.50	3.20	5.63	65.50	62.60	5.53	4.18	74.25	73.00
6.	1.5	1.0	77.50	73.33	2.50	4.50	72.92	73.05	3.50	3.45	82.45	80.56
7.	0.58	0.56	95.60	85.50	1.50	2.50	88.90	80.75	2.00	1.50	92.00	85.82
8.	0.60	0.43	97.90	89.53	0.50	2.00	97.20	89.60	0.50	1.50	97.50	90.13
9.	0.5	0.4	100	92.5	0	1.00	98.00	97.60	0.40	1.00	98.20	95.66

Table 4: Follow up after 9 weeks of AST.

GROUP	A [ASST+ve (N=25)]	B [ASST-ve(N=21)]
No. of completely asymptomatic patients	20 (80%)	15 (71.42%)

DISCUSSION

Since the time of Heberden who described urticaria and said "*...the greatest number of patients experience no other evil from it besides the intolerable anguish arising from the itching*", till this 21st century, urticaria has shown to have significant impact on patient's quality of life on the aspect of emotions, functioning as well as symptoms.[9] Chronic urticaria is a disease with unpredictable course and the treatment is continued till the disease goes into remission.[10] The need for newer therapeutic modality to supplement the antihistamines is long felt and any adjuvant therapy that can reduce the pill-burden while achieving symptom free period is welcome by the patients and physicians alike.[11] The sense of well-being that is reflected by the improvement of quality of life (measured by DLQI) and it was found to be significant in those receiving AST seen in our study. The improvement that was evident from AST continued even at one month which speaks for itself the usefullness of this therapeutic modality. The goal of therapy in chronic urticaria is to maintain a symptom free period and to ensure that the treatment is associated with least hazards. The ASST positive patients (54.34%) in our study were higher than that observed by Godse et al (26.7%) and Bajaj et al (49.5%).[12,13] Angioedema was present in 28% of Group A patients and 14.28% of Group B patients in our study. However, during therapy none of our patients experienced single episode of angioedema. Results of our study were comparable to other studies i.e. Vohra et al and Swerdt et al.[14,15] Thyroid function test was positive in 12% of Group A patients and none of Group B patients which showed significant association autoimmune urticaria as also observed by Yadav et al study.[16] Baseline

mean UAS (5.00±0.74) and TSS (14.56±1.82) was higher in Group A patients than Group B patients who showed mean UAS (4.5±0.70) and TSS (13.60±1.60) which was statistically significant with Toubi et al study, who demonstrated a trend towards a significant association between the severity of chronic urticaria and ASST positivity.[17] However, not all studies have shown a significant difference in UAS or TSS between the ASST-positive and the ASST-negative groups, signifying variable UAS and TSS presentation among these patients. Reduction in mean TSS was 14.56 to 0.50 in Group A patients and 13.60 to 1.00 in Group B patients. More than 50% improvement was noted in both groups of patients after 5 weeks which was 67.25% in group A and 67.50% in group B with regards to UAS. DLQI score improved from baseline 20.50% to 74.25% in Group A patients and 12.25% to 73% in Group B patients. After 9 weeks of therapy, improvement in Group A patients were higher with regards to UAS, TSS and DQLI.

Post therapy, after follow up period of one month, higher number of Group A patients experienced symptom free period which is given in Table 4.

CONCLUSION

ASST is considered a screening test for Autoimmune Urticaria. Patients with autoimmune urticaria have more severe symptoms, more prolonged duration and more frequent attacks. Our study showed that severity of urticaria symptoms were more in patients with ASST positivity. Symptoms improvement were noted in both ASST positive and ASST negative patients but patients with positive ASST required more time to experience the benefits of AST. However, improvement in quality of life, reflected by symptom free period was more evident in patients with positive ASST.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Patel B, Kapadia K, Chauhan K, Bhuptani N. A study of autologous serum skin test and autologous serum therapy in chronic urticaria. Int J Res Dermatol 2018;4:246-9.