**ORIGINAL ARTICLE**

**A Study of Autologous Serum Skin Test (Asst) and Autologous Serum Therapy (Ast) In Chronic Urticaria**

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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\(^{11}\). Evidence suggests that a subset of patients with CU may have an autoimmune basis for their condition, as shown by a positive skin test reaction to ASST. **OBJECTIVE:** To compare efficacy and to find out correlation 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 DVL(Skin) OPD of our institute from August 2014- August 2015. Thirty patients were selected randomly & Antihistaminics were withdrawn before ASST. Test was performed in all patients and therapy 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 & were recorded at baseline and weekly after each injection of AST. **RESULTS:** UAS and TSS showed significant improvement (>50%) after 5\(^{th}\) week onwards in both group patients. DLQI showed higher improvement in ASST positive patients. **CONCLUSION:** We found significant improvement in ASST positive and ASST negative patients but ASST positive patients require more time to experience the benefit of AST.

**Keywords:** ASST, AST, autoimmuneurticaria, UAS, TSS, DLQI.

**INTRODUCTION**

CU 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. 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. Chronic spontaneous urticaria(CsU) due to auto reactivity is defined by the presence of circulating mast cell activating signals. In some, but not all, patients with CsU due to auto reactivity these mast cell appear to be autoantibodies directed against the high affinity IgE receptor (FceRI) or against IgE itself. CsU due to auto reactivity is diagnosed by Autologous Serum Skin Test(ASST). Auto reactive urticaria nearly constitutes 20-35%. A study by Debbarman P et al. \(^{1}\) 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). Chronic urticaria (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. Search for newer effective modalities which can reduce pill burden is a felt need.

**OBJECTIVE**

- To compare efficacy of Autologous Serum Therapy (AST) in chronic urticaria.
- To find out any correlation of AST in ASST positive and ASST negative patients.
A Study of Autologous Serum Skin Test (Asst) and Autologous Serum Therapy (Ast)

To assess the impact of AST on Dermatology Life Quality Index (DLQI) in patients, before and after therapy.

MATERIALS AND METHODS

A prospective, interventional study was conducted in the DVL OPD of our institute from August 2014 to August 2015. Thirty patients were included in study.

Inclusion criteria:

- All patients above 18 years of age with refractory CU.

Exclusion criteria:

- CU due to predominantly physical causes
- Pregnancy and lactation
- Severe systemic illness
- Anticoagulation therapy
- Corticosteroids or immunosuppressive therapy

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 30 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). Treatment has been stopped in whom no response after eight sessions of AST. Tablet Levocetrizine(10mg) was given to patients in both treatment 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 injection 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. Two cases were lost in follow up which are not included in result. ASST was considered positive when the average of two perpendicular diameters of the autologous serum wheal is ≥ 1.5 mm more than the saline wheal.

Urticarial Activity Score(UAS)11 which measure two symptoms, number of wheals (0-3 scale per day) and intensity of itching (0-3 scale per day) is given in table 1. Urticaria Activity Score (UAS) = Wheal score + Pruritus score.

Table I: Urticarial Activity Score(UAS)11

<table>
<thead>
<tr>
<th>Score</th>
<th>Wheal</th>
<th>Pruritus</th>
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<tbody>
<tr>
<td>0</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Mild(&lt;20 wheals/24 h)</td>
<td>Mild (present but not annoying or troublesome)</td>
</tr>
<tr>
<td>2</td>
<td>Moderate (20-50 wheals/24 h)</td>
<td>Troublesome but does not interfere with sleep</td>
</tr>
<tr>
<td>3</td>
<td>Intense (&gt;50 wheals/24 h or large confluent areas of wheal)</td>
<td>Severe pruritus, which is sufficiently troublesome to interfere with normal daily activity or sleep</td>
</tr>
</tbody>
</table>

Total severity score (TSS)12 with interpretation given in table 2.

Table II: Total severity score (TSS)12

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of wheals</td>
<td>None ≤10</td>
</tr>
<tr>
<td>Size of wheals</td>
<td>None ≤1 cm</td>
</tr>
<tr>
<td>Intensity of pruritus</td>
<td>None Mild</td>
</tr>
<tr>
<td>Duration of persistence</td>
<td>None &lt;1 hour</td>
</tr>
<tr>
<td>Frequency of appearance</td>
<td>None once or once a week</td>
</tr>
<tr>
<td>Frequency of antihistamin use</td>
<td>None once or once a week</td>
</tr>
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</table>

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 was assessed by a validated vernacular (Gujarati) version of Dermatology Life Quality Index (DLQI) [http://www.dermatology.org.uk/downloads/DLQI_Gujarati.pdf] which consisted of ten questions, each scored between 0-3. Scoring will be done in each patient after the AST to assess the improvement of Quality of Life (QoL) after therapy.

RESULTS

A total of 28 cases 17 were female and 11 were male. Maximum number of patients i.e.12(42.8%) belonged to age group of 31-40 years with age range of 19 to 63 years. Family history was present in 1(3.6%) patient. ASST was positive in 12(42.9%) patients [group A] and negative in 16(57.1%) patients [group B]. History suggestive of atopy was present in 4(12)33.3% of group A patients and 3(16)18.8% of group B patients.
Aggravation with sour food found in (2/12) 16.7% of group A patients and (6/16) 37.6% 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 (7/12) 58.3% of group A patients and (10/16) 62.5% of group B patients. Thyroid function test was positive in (4/12) 33.3% of group A patients and none of group B patients. Observed baseline and weekly parameters (UAS, TSS and DLQI) in both groups given in table 3. After 9 weeks of therapy, four week follow up period we have observed that 75.0% of Group A patients and 67.8% of Group B patients remain completely asymptomatic with regards to urticaria symptoms.

**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 quality of life on the aspect of emotion, functioning as well as symptoms. Chronic urticaria is a disease with unpredictable course and the treatment is continued till the disease goes into remission. The need for newer therapeutic modality to supplement the antihistamines and leukotriene inhibitors 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. 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 usefulness 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 effect of variations in technique, the difficulty of defining a positive response accurately and interpretation of results are few difficulties defining ASST positivity. Therefore, newer techniques are still required for standardization of the ASST using objective measures of oedema, capillary blood flow and cellular inflammatory response. The ASST positive patients (42.9%) in our study was higher than that observed by Godse et al. (26.7%) but lower than Bajaj et al (49.5%). Angioedema was present in 58.3% of Group A patients and 62.5% of Group B patients in our study. Results of our study are comparable to other studies i.e. Vohra et. Al. and Swerdt et al and found no statistical significance as previously observed in these studies. However, during therapy none of our patient experience single episode of angioedema. Thyroid function test was positive in 33.3% of Group A patients and none of Group B patients which showed significant association with thyroid autoantibodies and auto reactive urticaria as also observed by Yadav et al study. Baseline mean UAS (4.75± 0.83) and TSS (14.42 ± 1.88) was higher in Group A patients than Group B patients who shows mean UAS (4.38 ±0.72) and TSS (12.63 ± 1.59) which was statistically significant with Toubi et al. study, who demonstrated a trend toward a significant association between the severity of chronic urticaria and ASST positivity. 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 14.42 to 5.92 in Group A patients and 12.63 to 4.06 in Group B patients. More than 50% improvement noted in both group of patients after 5 weeks of therapy which was 62.7% in group A and 63.7% in group B with regards to UAS. DLQI score improved from baseline to 67.1% in Group A patients and 63.81% in Group B patients. After 9 weeks of therapy, percentage improvement in Group B patients was higher with regards to UAS and TSS. However, improvement in DLQI score observed little higher in Group A patients.
Post therapy follow up period of one month, higher number of Group A patients experience symptom free period.

**Table IV: follow up after 9 weeks of AST**

<table>
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<tr>
<th>Follow up period</th>
<th>ASST positive(n=12)</th>
<th>ASST negative(n=16)</th>
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<tr>
<td>Completely asymptomatic</td>
<td>9(75.0%)</td>
<td>11(68.7%)</td>
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</table>

In our study, ASST positive urticaria patients, otherwise refractory to conventional therapy, Autologous Serum Therapy proved itself as an adjuvant therapy as shown in other studies previously.

**CONCLUSION**

Severity of urticaria symptoms were more in patients with ASST positivity. Symptoms improvement was noted in both ASST positive and ASST negative patients but patients with ASST positive urticaria required more time to experience benefit of AST. However, improvement in quality of life reflected as symptom free period was more evident in patients with ASST positivity.

**REFERENCES**