

## Original Research Article

# A cross sectional study on dental infections in chronic urticaria

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### ABSTRACT

**Background:** Urticaria is considered to be caused by infections, emotions, and also allergy to common substances in the environment, particularly drugs. The relation of active dental infection to chronic urticaria is sought frequently, yet there are few detailed reports of the incidence and importance of such a relationship. The aim of the study was to determine the prevalence of dental infection occurring in chronic urticaria patients attending Dermatology, Venereology and Leprosy (DVL) OPD at Osmania General Hospital, Hyderabad.

**Methods:** A cross-sectional study was done from August 2018 to May 2019 on 100 patients of age group between 16 to 60 years with chronic urticaria attending DVL OPD at Osmania General Hospital, Hyderabad. They have been referred to the dental department and were reviewed to determine the incidence of dental infections.

**Results:** Out of 100 cases, 66 were males and 34 were females. Youngest patient seen was 17 years and the oldest was 60 years. Peak incidence was seen in 31 to 40 years (36 cases of 36%), followed by 21 to 30 years (30 cases of 30%), 41 to 50 years (16 cases of 16%), 51 to 60 years (14 case of 14%) and 16 to 20 years (4 cases of 4%). Evidence of dental infections was found in 42 cases of which 26 cases (18 males, 8 females) were having dental caries, 58 (58%) patients had no evidence of dental infection.

**Conclusions:** Urticaria may be considered to be a pattern of reaction to many different stimuli, as suggested by unpredictable remissions and exacerbations. Many of the dental infections go unnoticed in chronic urticaria, we have found a high prevalence (42%) of these infections in our study.

**Keywords:** Urticaria, Dental infections, Dental caries

### INTRODUCTION

Urticaria is a common disorder that may cause considerable distress and last for years, but the symptoms can usually be alleviated by appropriate management. Urticaria is characterized by transient skin or mucosal swellings due to plasma leakage. Allergy, autoimmunity, drugs, dietary pseudo allergens, and infections are to be considered as some of the causes, though many cases of spontaneous urticaria remain idiopathic. Urticaria is classified according to its duration into acute (duration  $\geq 6$

weeks) and chronic (duration  $\geq 6$  weeks) forms. The role of infection as a potential trigger for urticaria and angioedema is well described but the precise mechanism by which infection induces the release of histamine from mast cells is unknown. Chronic urticaria (CU) is defined by recurrent episodes occurring at least twice a week for 6 weeks.<sup>1</sup> Females are more commonly affected than males.<sup>2</sup> CU is associated with lower quality of life (QoL) levels.<sup>3,4</sup> Most of the recent advances in our understanding of its pathogenesis include the finding of autoantibodies to mast cell receptors in nearly half of

patients.<sup>5</sup> But there are no recent studies a large sample of patients dealing with dental infections in urticaria, the aim of our study was to determine the prevalence of dental infection occurring in chronic urticaria patients attending DVL OPD at Osmania General Hospital, Hyderabad.

**METHODS**

A cross-sectional study was done from January 2019 to June 2019 at the department of DVL, Osmania Medical College, Hyderabad by collecting records of 100 patients with chronic urticaria of age group between 16 to 60 years. After taking a thorough history, cutaneous and oral examination, all routine blood investigations along with liver function test, renal function test, thyroid profile, ultrasonography (USG) abdomen were done. Some patients were referred to the dental department in the search for foci of infection and some of the patients were referred because of dental symptoms and signs noted at the time of the initial complete examination. These patients underwent a thorough clinical and radiological dental examination. Clinical examination was performed. They were reviewed to see the presence or absence of dental infections.

For the purpose of this study, chronic urticaria is defined as persistent or recurring urticaria, with or without angioedema, of more than six weeks' duration. The eruption had been present for many weeks or months in most cases and years in some cases and intermittently from childhood in a few adults.

Dental caries is defined as a multifactorial microbial infectious disease characterized by demineralization of the inorganic and destruction of the organic substance of the tooth.

An alveolar abscess is defined as roentgen evidence of bone resorption at the root end of a tooth. Advanced periodontal disease is defined as the loss of the supporting bone structure of the tooth to more than two-thirds of the length of the root, or involvement of the bifurcation of multirooted teeth as determined roentgenographically. All patients received a chest X-ray and were examined with the purpose of detecting dental infections and polyposis or sinusitis. Vitality tests of the teeth were done by hot and cold application or by electric stimulation. Dental roentgenograms were taken in all patients.

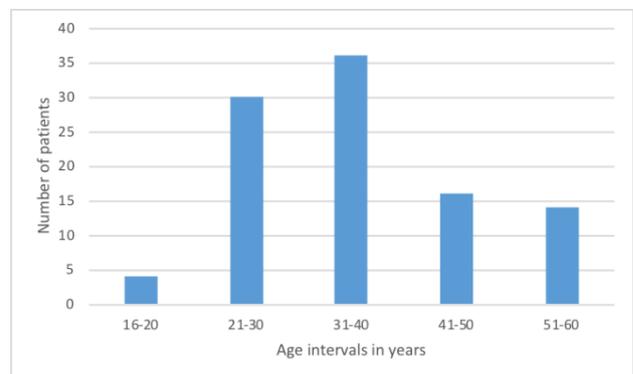
Roentgenograms of the paranasal sinuses were made when there was the slightest suspicion of abnormalities. Treatment was instituted when abnormalities were detected. patients had their erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) determined on the day of the test. suspected tooth (or teeth) was stimulated by polishing rubber for 2 minutes. ESR and CRP were then determined 24 hours after the test. if there was at

least a double increase in ESR and CRP level, the test was considered positive.

Data were organized in the MS Excel® spreadsheets and presented in the descriptive manner used on comparison of nominal variables and t-test on comparison of numerical variables. The values of p lower than 0.05 (p<0.05) were considered statistically significant.

**RESULTS**

In total 100 patients, 66 were males and 34 were females. Youngest patient seen was 17 years and oldest 60 years. Peak incidence of urticaria seen in 31 to 40 years (36 cases- 36%), followed by 21 to 30 years (30 cases- 30%), 41 to 50 years (16 cases- 16%), 51 to 60 years (14 cases- 14%) and 16 to 20 yrs (4 cases- 4%). Evidence of dental infections were found in 42 cases of which 26 cases (18 males, 8 females) were having dental caries.



**Figure 1: Age distribution in the present study.**

Various types of urticaria seen in our study are given in Table 1.

**Table 1: Types of urticaria among patients with chronic urticaria.**

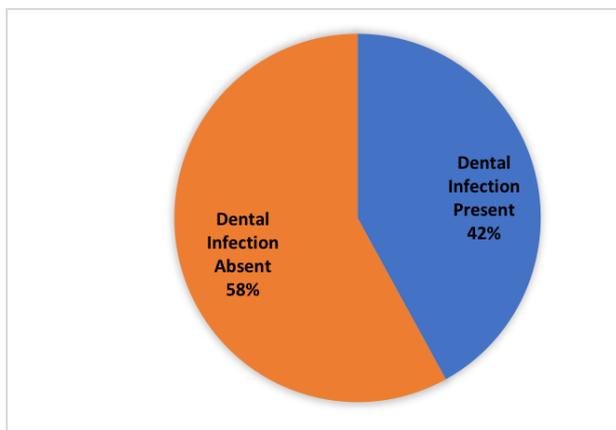
	Males	Females	Total
<b>Physical urticaria</b>			
Urticaria factitial	15	11	26
Pressure urticaria	5	2	7
Cold urticaria	3	1	4
Cholinergic urticaria	3	0	3
Solar urticaria	1	2	3
<b>Idiopathic urticaria</b>	35	16	51
<b>Angioneurotic edema</b>	3	1	4
<b>Total</b>	66	34	100

Evidence of dental infections was found in 42% (42 cases), out of which 28 were males and 14 were females. Out of these 42 cases, 26 cases (18 males, 8 females) were having dental caries. Chronic alveolar abscesses were present in 03 patients, (2 males and 1 female). Advanced periodontal disease was present in 13 patients (8 males and in 5 females). Both alveolar abscesses and

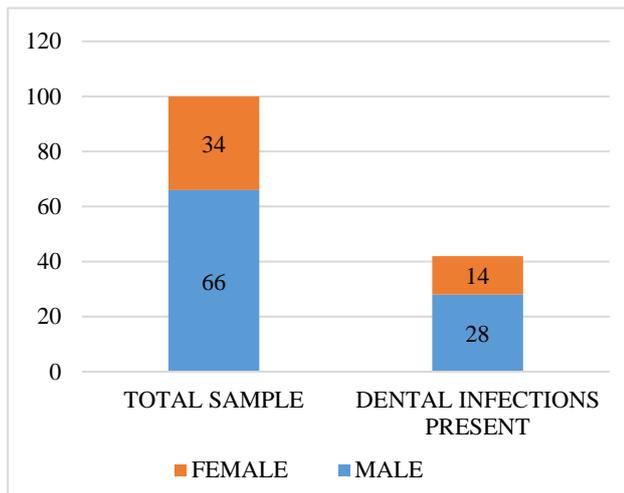
periodontal disease were present in one male patient. 58 (58%) patients had no evidence of dental infection.

**Table 2: Dental status and pathology in the present study.**

	Number of patients (%)
<b>Dental status</b>	
Dental pathology present	42 (42)
Dental pathology absent	58 (58)
<b>Dental pathology</b>	
Dental caries	26 (26)
Advanced periodontal disease	13 (13)
Chronic alveolar abscesses	3 (3)
Total	42



**Figure 2: Incidence of dental infections.**



**Figure 3: Incidence of total infection in association with gender.**

**DISCUSSION**

Urticaria may be considered to be a pattern of reaction to many different stimuli, as suggested by unpredictable remissions and exacerbations. These features are the

result of degranulation of mast cells with the release of granule contents, predominantly histamine. The mainstay of treatment is high dose antihistamines and leukotriene receptor antagonists. In recent years, the anti-IgE monoclonal antibody therapy, Omalizumab, has been used as an effective treatment for patients who fail to respond to first and second line therapy.

The worldwide incidence is 0.1%-3% of the population with women affected twice more likely than men. In the present study peak incidence of urticaria seen in 31 to 40 years in 36 cases followed by 21 to 30 years (Figure 1).

In previous studies, it is estimated that lifetime incidence of urticaria is approximately 15%, with females being affected more often than males. Both children and adults may develop urticaria, with the peak age of onset in adults being between 20 and 40 years.<sup>2</sup>

In the present study, we have found a mean age group of 34.6 years. have is comparable to the studies done by Kulthanan et al, Sabroe et al, Vohra et al, Ganguly et al, in which the mean age distribution was 38.8 years, 45 years, 32.69 years and 36 years respectively.<sup>4,10-12</sup> George et al, reported in their study out of 100 CU patients male to female ratio was 1:1.2 exhibiting female preponderance.<sup>10</sup> Whereas the study done by Sabroe et al showed a male predominance among 107 chronic idiopathic urticaria patients with a male to female ratio of 5:1.12.<sup>7</sup> in the present study we have found a male predominance with male to female ratio of 1.9:1 (Figure 3).

Several studies have demonstrated an increased prevalence of oropharyngeal infections including dental infections, sinusitis and tonsillitis in patients with chronic urticaria.<sup>8-10</sup>

In the present study evidence of dental infections were found in 42 cases (42%) of which 28 were males and 14 were females. 58% of the patients have no evidence of dental infections.

In the present study, in most cases, dental caries or decay tooth is an incidental finding in most of our patients. They were unaware of the decayed tooth and didn't have any complaints, only a few patients presented with gingivitis. If not treated early can lead to periodontal disease, dental abscess, dental sepsis. Patients with urticaria having advanced periodontal disease most common presentation of dental disease followed by Chronic alveolar abscesses. Periodontal disease is seen associated with chronic skin diseases such as chronic urticaria, Tanphaichitr et al showed chronic urticaria of five years duration, which was associated with chronic extensive dental infection and periodontal disease, is presented to show the importance of dental infection as a trigger mechanism of urticaria.<sup>11,12</sup> Clinicians should recognize the potential role that infection can have in causing chronic urticaria.

Other infections reported to be associated with CSU include *Helicobacter pylori* which are known to have immunomodulatory effects.<sup>13</sup> However, *H. pylori* eradication in CSU patients has had a mixed result.<sup>14-16</sup> Remission of urticaria was frequently noted following antibiotic therapy. This fits with our clinical experience in children.<sup>16</sup> Nevertheless, systematic antibiotic treatment studies of dental or ENT focal infections are lacking although benefit after oral cephalosporin or amoxicillin treatment has been described.<sup>17</sup> In urticaria, it is often a common practice to prescribe an antihelminthic drug for the possibility of intestinal parasitic infections in endemic regions. There is a need for routine oral examination in chronic urticaria considering the high prevalence of dental infections in the present study.

Dental infection is one of the most overlooked infection in urticaria. This study highlights the need for routine examination to look for dental infections as a source in chronic urticaria

But having a high prevalence of dental infections there are few studies on its relation to urticaria.

## CONCLUSION

Even though the importance of dental infection in urticaria is not clear, search for such infection seems indicated in patients with stubborn urticaria of obscure origin. Further studies are required in to see the association between the dental infections and chronic urticaria, and to see the if there is any change in the course of urticaria after proper dental treatment.

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