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# "STUDY OF PREVALENCE OF IRON DEFICIENCY ANAEMIA IN CHRONIC URTICARIA"

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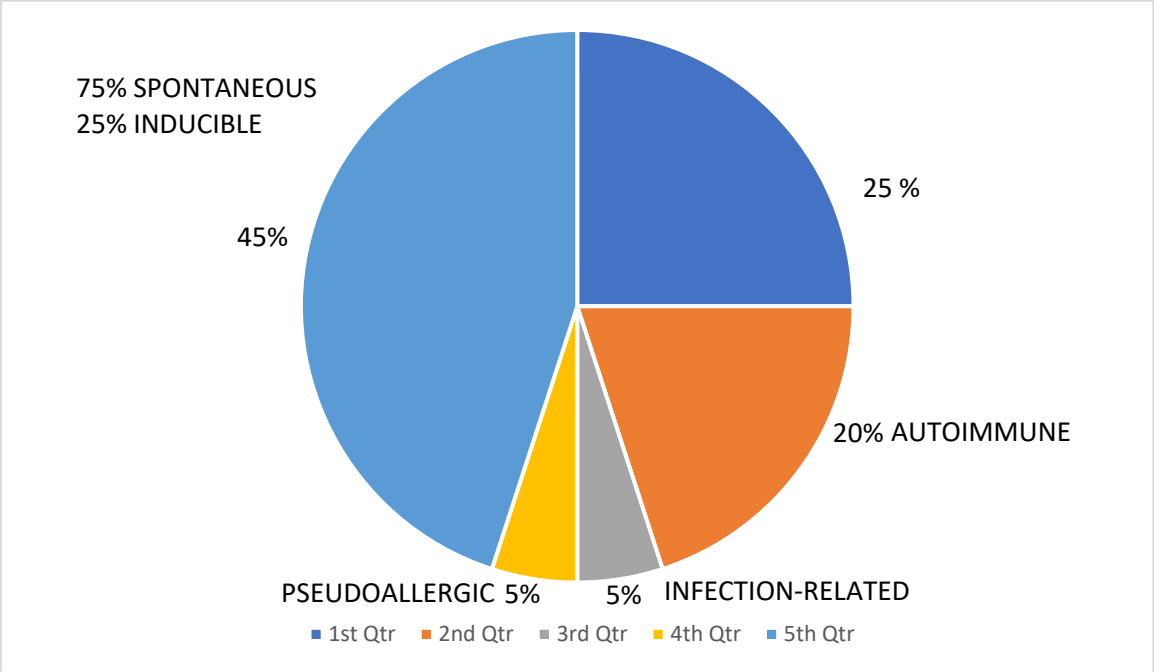
**AIM :** To Study Prevalence of Iron Deficiency Anaemia in patients with Chronic Urticaria
**METHODOLOGY:** An Observational cross sectional study was conducted in Dermatology department of IMCHRC Indore for a period of one year. All the adult patients with complaints suggestive of chronic urticaria for a period of more than 6 weeks, A total of 100 patients were involved in the study.
**RESULT:** In our study we studied the association between Iron deficiency anemia and chronic urticaria. Higher prevalence of low ferritin level was seen in case group as compare to control group. while normal and high ferritin level were seen predominantly in control group as compare to case group. Higher prevalence of low hemoglobin level was seen in case group as compare to control group. Normal and high hemoglobin level were seen more predominantly in control group as compare to case group.
**CONCLUSIONS:** In this study we observed there is high prevalence of iron deficiency anemia in patients with chronic urticaria.

## INTRODUCTION:

### CHRONIC URTICARIA

Chronic Urticaria is defined as recurrent wheals on skin for a period of 6 weeks or more with treatment. The term chronic urticaria should only be applied to continuous urticaria occurring at least twice a week off treatment [1] Superficial dermal swellings are wheal , wheals can be few milli meters

in diameter or large as hand and the number can vary from a few to numerous , they are pruritic and pink or pale in colour [2]
The hallmark of wheals is that individual lesions come and disappear , generally within 24 hours
Causes leading to chronic urticaria is complex and multifactorial.
They are
1} Idiopathic
2} Immunologic-
Autoimmune (autoantibodies against IgE )
IgE - dependant
Immune complex
Kinin and complement dependent
3}Non-immunologic
Direct mast cell releasing agent (example opiates)
Vasoactive stimuli (example nettle stings )
Aspirin , other non-steroidal anti-inflammatory drugs , dietary pseudoallergens
4} Angiotensin-converting enzyme inhibitors[3]




Chronic Urticaria is frequent , remains often idiopathic despite diagnostic efforts , and sometimes poorly responds to oral antihistamines or corticosteroids .
It has been reported that iron deficiency anaemia is often found in patients with chronic urticaria poorly responsive to usual treatments , oral iron therapy is frequently associated with improvement or resolution of urticaria [4]

**IRON DEFICIENCY ANAEMIA:**
Iron deficiency is the most common type of anaemia, and it occurs when your body doesn't have enough of the mineral iron. body needs iron to make haemoglobin. When there isn't enough iron in your blood stream, the rest of your body can't get the amount of oxygen it needs. While the condition may be common, many people don't know they have iron deficiency anaemia. It's possible to experience the symptoms for years without ever knowing the cause. [5]

## CHRONIC URTICARIA AND IRON DEFICIENCY ANAEMIA

Also known as SIDEROPENIC URTICARIA

The possible link between hyposideremia and urticaria has been reported. In vitro experimental data suggest that transferrin inhibits histamine release from mast cells, and a direct correlation exists between the level of transferrin saturation and the degree of inhibition of histamine release.[6] Reduced transferrin saturation due to hyposideremia could lower the threshold of stimulation required for mast cell degranulation, thus increasing the risk of urticaria in response to endogenous and/or exogenous pathogenic stimuli, even minimal. Further studies are necessary to better understand frequency and pathogenic mechanism(s) of "sideropenic urticaria" (chronic urticaria associated with hyposideremia and favourably responding to iron supplementation). [7]]From a clinical point of view, evaluation of serum iron levels in selected patients appears advisable, in the light of the relatively low cost and possible significant benefits

Ferritin is stored in the body's cells until it's time to make more red blood cells. The body will signal the cells to release ferritin. The ferritin then binds to another substance called transferrin. Transferrin is a protein that combines with ferritin to transport it to where new red blood cells are made [8]

**AIM: To** Study Prevalence of Iron Deficiency Anaemia in patients with Chronic Urticaria

## MATERIAL AND METHODS:

A case control study was conducted in the Dermatology department of Index Medical College Hospital and Research Centre, Indore for a period of one year from September 2022 to September 2023. The study was formally started after getting the clearance from the institutional ethical committee. All the adult patients of more than 16 years and less than 60 years With complaints suggestive of chronic spontaneous urticaria for a period of more than 6 weeks, included in the study. 50 patients selected from OPD with symptoms of recurrent urticaria of both sexes were entered in this case group and 50 patients with other cutaneous diseases served as controls. The study included a total of 100 patients (50 cases and 50 controls). The research protocol was approved by the Institutional ethics and scientific review committee. Patients less than 16 years and more than 60 years & patients not giving consent for the study were excluded from the study. Informed consent taken from the patients for enrollment in the study. Detailed history and clinical examination was conducted and the details were entered in a proforma. History include age, occupation, duration of urticaria (based on patient history), treatment details for urticaria (on the contour drug). Personal history and drug history for any allergies, chronic illness, hypertension, diabetes mellitus was taken. Family history of chronic urticaria was taken. Investigation details like Complete blood count (CBC) including peripheral blood smear& Ferritin levels were done. Clinical examination was done. General, physical, and systemic examinations were carried out and recorded & History taken for wheals and it's there association, duration, size, and drug history. The data were collected and entered in MS excel 2010. Statistical analysis was performed using online software. Mean and standard deviation were calculated for quantitative variable and frequency and percentage for qualitative or categorical variables. Measure the association for categorical dataset were analyzed using Chi-Square test. If p value < 0.05, considered as statistically significant result and if pvalue>0.05, then it is statistically insignificant result.

## RESULTS:

**Table 1 Distribution of patients according to groups**

| Groups | Number | Percentage |
|---|---|---|
| cases | 50 | 50% |
| controls | 50 | 50% |
| Total | 100 | 100% |

The above table shows the distribution of patients according to groups. The study included a total of 100 patients. There were 50(50%) patients in case group and 50(50%) patients were taken to serve as controls. The cases were patients of the chronic idiopathic urticaria and controls were the patients with another cutaneous disease. The study is done to see the correlation of chronic spontaneous urticaria with serum ferritin and CBC levels as compared to other cutaneous disease.

**Table 5 Comparison of Mean Ferritin Level (ng/ml) between the two groups**

| Ferritin Level (ng/ml) | Groups | | | | Total | |
|---|---|---|---|---|---|---|
| | Case | | Control | | | |
| | No. | % | No. | % | No. | % |
| Normal (20-110 ng/ml) | 17 | 34.0% | 33 | 66.0% | 50 | 50.0% |
| Low (<20ng/ml) | 25 | 50.0% | 6 | 12.0% | 31 | 31.0% |
| High (>110 ng/ml) | 8 | 16.0% | 11 | 22.0% | 19 | 19.0% |
| Total | 50 | 100.0% | 50 | 100.0% | 100 | 100.0% |

Unpaired 't' test applied. P value = 0.006, Significant*

The above table shows the comparison of ferritin level between the two groups. The mean ferritin level in Case group, was 47.098±52.443, while in the control group, it was 74.144±44.329. The above association found to be statistically significant ($p<0.05$) which shows that there is a difference between the two group means. The mean ferritin level (ng/ml) was significantly lower in case group compared to control group.

**Table 8 Comparison of Haemoglobin Level (g/dl) between the two groups**

| Haemoglobin Level (g/dl) | Groups | | | | Total | |
|---|---|---|---|---|---|---|
| | Case | | Control | | | |
| | No. | % | No. | % | No. | % |
| Normal | 14 | 28.0% | 25 | 50.0% | 61 | 61.0% |
| Abnormal | 36 | 72.0% | 25 | 50.0% | 39 | 39.0% |
| Total | 50 | 100.0% | 50 | 100.0% | 100 | 100.0% |

Pearson chi-square test applied. Chi-Square value = 5.086, df= 1, P value = 0.24, Not Significant
Fisher's Exact Test = 0.40
The above table shows the distribution of patients according to Haemoglobin level. In the Case Group, 14(28.0%) patients had normal Haemoglobin level, 36(72.0%) patients had abnormal Haemoglobin level. In the Control Group, 25(50.0%) patients had normal Haemoglobin level, 25(50.0%) patients had abnormal Haemoglobin level. There was no statistically significant association between Haemoglobin and the groups (P=0.227), showing that the groups are independent of Haemoglobin.

**DISCUSSION:**

**SERUM FERRITIN AND CHRONIC SPONTANEOUS URTICARIA:**

The mean ferritin level in Case group, was 47±52, while in the control group, it was 74±44. The mean ferritin level (ng/ml) was significantly lower in case group compared to control group.

Annunziata Bartolotta (2017) the study shows urticaria in association with low serum iron levels. Thereafter giving oral iron therapy for 3 months. There were no urticarial episodes which could be seen during the follow-up visits, after 6-12 months.
Guarneri F. et al (2014) they noticed that hyposideremia is often found in patients with chronic idiopathic urticaria, and oral iron therapy has association with the improvement and resolution of urticaria. The mean Haemoglobin Level (g/dl) was significantly lower in case group compared to control group.

**LABORATORY TEST:**
The mean ferritin level in Case group, was 47.9, while in the control group, it was 74.14. The above association found to be statistically significant ($p<0.05$)which shows that there is a difference between the two group means. The mean ferritin level (ng/ml) was significantly lower in case group compared to control group.
The mean haemoglobin level in Case group, was 11.1, while in the Control group, it was 12.076. The above association found to be statistically not significant ($p<0.05$) which shows that there is a difference between the two group means. The mean Haemoglobin Level (g/dl) was significantly lower in case group compared to control group.
In Case group, there were 44(88.0%) patients had negative family history and 6(12.0%) patients had positive family history in relation to Recurrent Chronic Urticaria.
In Control groups, there were 50(100.0%) patients had negative family history in relation to chronic spontaneous urticaria
There was a statistically significant association seen between family history and the groups (P=0.012), showing that the groups are dependent on family history, which shows a higher positive family history in case groups compare to control group.

**CONCLUSION:**
From a clinical opinion, available data indicate that examination of serum iron levels can be contemplated with the diagnostic workup of chronic and evidently idiopathic urticaria in assigned patients, in reflection of low cost and considerable advantages. Despite the fact, that the connection between iron deficiency anaemia and chronic urticaria is not evident, therefore we believe that besides the immediate effect of Iron deficiency, its modulatory function on numerous inflammatory cells might somewhat illustrate the association of iron deficiency anaemia with chronic urticaria. We acknowledge that this research may contribute potential routes for future research on comprehending the role of iron deficiency anaemia in chronic urticaria. Following cohort studies evaluated whether iron deficiency anaemia could be utilized as an auxiliary characteristic to foresee the disease harshness and clinical course in chronic urticaria patients. Likewise, iron supplementation might be used to enhance the indications of those with chronic urticaria, or to provide advantages as an add on therapy in the treatment of chronic urticaria.

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