

ASSOCIATION OF OBESITY WITH CHRONIC IDIOPATHIC URTICARIA AT BIRAT MEDICAL COLLEGE AND TEACHING HOSPITAL

Choudhary D^{1*}, Shrestha SY¹

Affiliation

1. Lecturer, Department of Dermatology, Venereology and Leprology, Birat Medical College and Teaching Hospital

ARTICLE INFO

Received : 25 July, 2020

Accepted : 28 August, 2020

Published : 05 October, 2020

© Authors retain copyright and grant the journal right of first publication with the work simultaneously licensed under Creative Commons Attribution License CC - BY 4.0 that allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal.



ORA 188

DOI: <https://doi.org/10.3126/bjhs.v5i2.31411>

* Corresponding Author

Dr. Dilip Choudhary
Lecturer

Department of Dermatology, Venereology and Leprology
Birat Medical College and Teaching Hospital
Email ID: linktodilip@gmail.com
ORCID ID: <https://orcid.org/0000-0002-9358-7028>

Citation

Choudhary D, Shrestha SY. Association of Obesity with Chronic Idiopathic Urticaria at Birat Medical College and Teaching Hospital. BJHS 2020;5(2)12: 1087-1090.

ABSTRACT

Introduction

A frequent association between metabolic syndrome with chronic idiopathic urticaria has been suggested by many studies but thorough investigations about the influence of obesity and overweight on chronic spontaneous urticaria has not been done.

Objectives

To find out the association of obesity with chronic idiopathic urticaria.

Methodology

Patients with chronic idiopathic urticaria were assessed for the body weight, height, body mass index, age of disease onset and duration of the disease.

Results

A total of 151 patients were enrolled in the study and among them 64 % were females as compared to 26 % males. The age of the patients included ranged from 17 years to 77 years. Among the patients included in study, 69 % of the patients suffering from CIU were found to be overweight and obese. The body mass index of the patient included ranged from 16.7 to 34.2 with mean of 24.3+/-4.3.

Conclusion

There is a relatively high incidence of urticaria among the people who are obese and overweight.

KEYWORDS

Body mass index, Chronic idiopathic urticaria, Obesity



INTRODUCTION

Chronic idiopathic urticaria (CIU) is one of the most commonly encountered diseases in a dermatological out-patient department. This condition is primarily characterized by eruption of transient itchy erythematous pink to red wheals characterized by edema that usually heals without leaving any marks within a period of 24 hours, occurring on most of the days for duration of more than 6 weeks. It is a heterogeneous syndrome and its etiology is not yet clearly understood however the main event is due to activation of mast cells leading to its degranulation releasing inflammatory mediators like histamine, leukotrienes and proteases causing all the symptoms. There is a evidence of autoimmunity in around 45% cases of CIU whereas in rest of the cases no conclusive cause is found.¹ There is a hypothesis that the release of cytokines is due to the activation and degranulation of circulating mast cells caused by specific circulating autoantibodies against IgE receptors (Fc epsilon RI alpha receptors) or dermal mast cell bound IgE.^{2,3} Apart from this there has also been evidence of association of altered thyroid function and antithyroid antibodies with the disease however the exact pathogenic mechanism is still not clear.^{4,5}

Metabolic syndrome is defined as combination of central/abdominal obesity, abnormal lipid profile, glucose intolerance and hypertension according to National Cholesterol Education Program's Adult Treatment Panel III.⁶ Previous studies have reported association of inflammatory disease, like systemic lupus erythematosus, psoriasis and rheumatoid arthritis, with metabolic syndrome.²¹ There is a pro coagulant and systemic proinflammatory state in patients with metabolic syndrome according to some study and it is evidenced by increase in the level of cytokines like C-Reactive protein, IL-6 and tumour necrosis factor.⁷ Similar proinflammatory and procoagulant states with the rise in similar cytokines occur in cases of Chronic idiopathic urticaria whatever the cause may be.⁸

Body mass index (BMI) is one of the tools for assessment of obesity, which is considered as one of the important component of metabolic syndrome. Central obesity is a good marker signifying the increased BMI in an individual. The formula for calculating BMI is kilograms divided by square of height measured in meters.⁹ The most commonly accepted BMI ranges are underweight (under 18.5 kg/m²), normal weight (18.5 to 25), overweight (25 to 30), and obese (over 30). A lot of dermatological disease has been associated with obesity and both obesity and urticaria appears with increased frequency in females.¹⁰

A fair amount of evidences suggests that there is a chronic low grade inflammation associated with obesity and there is an increase in the amount of proinflammatory cytokines and acute phase proteins in obese person.⁶ There can be an alteration in immune responses due to obesity as well. Although an underlying autoimmunity and systemic inflammation has been seen in majority of chronic urticaria patients, there are no reports of association between chronic urticaria and obesity. A frequent association

between hyperlipidemia and metabolic syndrome with chronic spontaneous urticaria has been suggested by many studies but a thorough investigations about the influence of obesity and overweight on chronic spontaneous urticaria has not been done.^{10,11} Many previous research have suggested excessive body weight as one of the potential risk factor attributed to the development of allergic disease in body^{3,6,12}, however very few studies are available to show the suggestion between obesity and chronic spontaneous urticaria. So this study is done to further validate whether there is any association of obesity with CIU symptoms.

METHODOLOGY

This quantitative cross sectional study was conducted in the Department of Dermatology, Venereology and Leprology, Birat Medical college Teaching Hospital, Biratnagar, Nepal from February 15 to July 15, 2020. Permission for the study was taken from the Institutional review committee, BMCTH. All the patients fulfilling the criteria in the range of 18-77 years of age were enrolled into the study. Consecutive sampling method was used for collection of samples. The basis for diagnosis of CIU was analysis of the entire clinical picture (appearance of wheals almost every day for a period of at least 6 weeks) and exclusion of other coexisting disease (thyroid abnormality was excluded based on laboratory findings). We used a specifically designed proforma to collect the data. After taking written informed consent from the patients fulfilling the inclusion criteria, sociodemographic information was taken along with height and weight of the participants to calculate Body mass index. We calculated Mean body weight, body height, BMI, age of disease onset and duration of disease for the whole group.

The collected data were entered in MS Excel, coded and analysed using SPSS software. The confidentiality and anonymity of participants were assured and Descriptive statistical measures were calculated.

RESULT

A total of 151 cases fulfilling the inclusion criteria were included in the study. Among the patients included 97 were females and 54 were males ranging in age between 18-77 years. Body Mass Index ranged from 16.7 to 34.2 with mean 24.3+/-4.3.

Among the patients with urticaria 104 patients were found to be overweight or obese which comes out to be around 69% of the total cases of urticaria suggesting a relatively high incidence of urticaria among the peoples with high body mass index. The distribution of patients according to BMI is shown in figure 2. The average duration of disease among the underweight and normal weight patients is 12 weeks as compared to 39 weeks among the overweight and obese patients.

The height of the patients enrolled ranged between 4 feet 9 inches (149 cm) to 6 feet 3 inches (192 cm) with an average of 5 feet 6 inches. The average weight of patients enrolled was 77.5 kg with the lowest being 47 kg and highest being 108 kg.



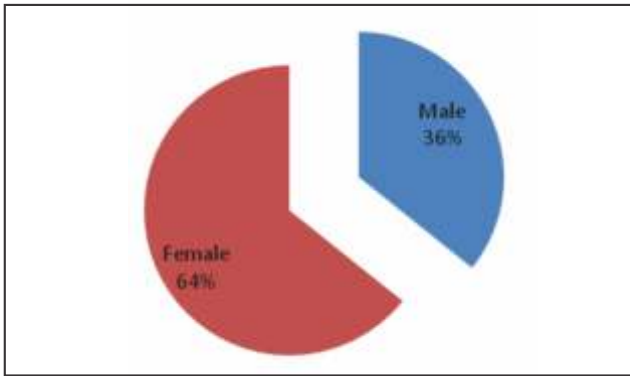


Figure 1: Distribution by gender

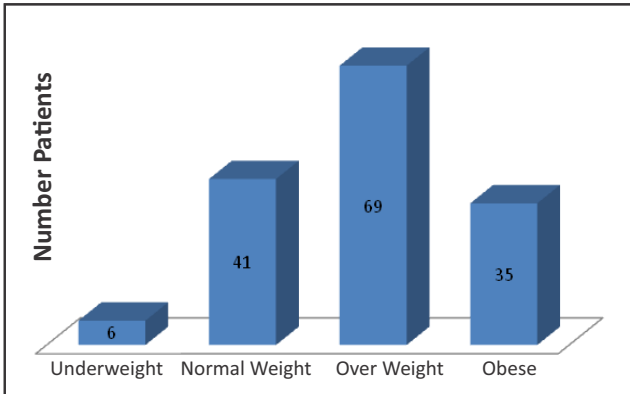


Figure 2: Distribution according to Body Mass Index

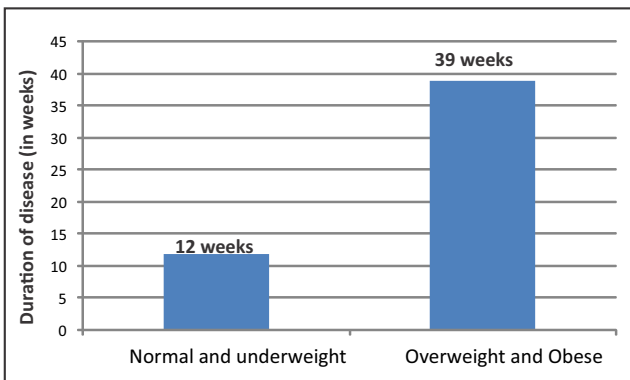


Figure 3: Comparison of Average duration of disease

DISCUSSION

A lot of theories regarding the etiology of urticaria have been postulated till date, but still in a majority group of patients with urticaria the etiology of the disease remains unrecognized. Significant factors constituted in inflammatory conditions can contribute to the development of chronic idiopathic urticaria. Though Urticaria is not a life threatening condition, it has a very negative impact on the patient's quality of life and causes a lot's of socio-economic burden.

A study done by Lapi et al states that a number of different factors are related to the risk of development of urticaria.¹³ Though a lot of studies to suggest association of thyroid abnormality with urticaria has been done worldwide in the past few decades,^{14,15} however very few studies have been done to establish association of high BMI with urticaria

although obesity is associated with autoimmune thyroid diseases.

Our study revealed that the prevalence of CIU is more in females as compared to males (64% compared to 36%) which is in accordance to the study done by Deacock et al.¹⁶ This may be due to the fact that hormones do play a significant role in the patho-physiology of urticaria as suggested by a study which quotes the term autoimmune progesterone urticaria to be more prevalent among women.¹⁷ Chronic urticaria do fluctuate during hormonal cycle and also there is exacerbation of pre existing urticaria during pregnancy.¹⁸

Our study also revealed that the incidence of urticaria was more among the patients who were overweight or obese which is also in accordance with other several studies previously.^{6,19} This may be due to the fact that there are several evidences that prove obesity has been associated with chronic low grade inflammation²⁰ and due to this obese person has decreased immune tolerance to antigens hence increasing the chances of allergies and other immune diseases due to the shift of balance towards T helper 2 profile.²¹ Apart from this there is increased level of circulating inflammatory markers like interleukin-6, cytokines, acute phase reactants and tumor necrosis factors in obese patients.²²

In one of the study done, it was found that there was a significant correlation between waist circumference with tumor necrosis factors, triglycerides and T helper 2 levels among the patients suffering from chronic urticaria and hence obesity may be associated with increased disease activity in obese patients.²³

Our study also revealed that the duration of the disease or the symptoms varied among the normal weight people and the overweight or obese participants with the average duration of disease being more in the obese or overweight people. A similar kind of results was found in a study done by Ye et al which showed that the disease course of CIU seems to be more severe and chronic among the obese patients.²⁴

CONCLUSION

A lot of hypothesis has been linked with the pathogenesis of chronic urticaria and obesity and metabolic syndrome is one of them. To our knowledge no studies to validate this fact have been done in our part of world and this study was done to see the association between obesity and CIU. The result of our study is in accordance with few other studies done in other parts of world and reveals that there is in fact an increased prevalence of CIU among the obese patients and patients with high BMI.

RECOMMENDATIONS

Further similar large scale comparative studies are required to validate the association of obesity with chronic idiopathic urticaria. we need a holistic approach for the treatment of urticaria patients and also need to address the problem of obesity, which affects an increasingly large group of people. So while treating a patient with CIU we need to do a

thorough clinical examination with an individually selected panel of diagnostic tests and initiate an effective therapy based on this. However in most of the cases it is very difficult to determine the cause of urticaria symptoms, so the treatment should be initiated based on modern antihistaminic therapy that may be supplemented with alternative therapies like weight reduction or treatment of dyslipidemias.

LIMITATIONS OF THE STUDY

The limitations of our study were small sample size and absence of control group. Also it would have been better if we could see the lipid profile of all the patients but then that would put a financial burden to the patients.

ACKNOWLEDGEMENTS

We would like to thank our patients who co operated us during our study and the department of Dermatology for allowing us to conduct this study. we would also like to give special thanks to everyone from from Birat Medical college and Teaching hospital for their continuous support and encouraging words.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest

FINANCIAL DISCLOSURE

This is a self funded research study

REFERENCES

- Kaplan AP. Treatment of chronic spontaneous urticaria. *Allergy, asthma & immunology research*. 2012;4(6):326-31. PMID: 23115728
- Zuberbier T, Asero R, Bindslev-Jensen C, Walter Canonica G, Church MK, Gimenez-Arnau AM, et al. EAACI/GA(2)LEN/EDF/WAO guideline: management of urticaria. *Allergy*. 2009;64(10):1427-43. PMID: 19772513
- Kaplan AP, Greaves M. Pathogenesis of chronic urticaria. *Clinical and experimental allergy : journal of the British Society for Allergy and Clinical Immunology*. 2009;39(6):777-87. PMID: 19400905
- Rumbyrt JS, Schocket AL. Chronic urticaria and thyroid disease. *Immunology and allergy clinics of North America*. 2004;24(2):215-23, vi. PMID: 15120148
- Verneuil L, Leconte C, Ballet JJ, Coffin C, Laroche D, Izard JP, et al. Association between chronic urticaria and thyroid autoimmunity: a prospective study involving 99 patients. *Dermatology*. 2004;208(2):98-103. PMID: 15056996
- Ye YM, Jin HJ, Hwang EK, Nam YH, Kim JH, Shin YS, et al. Co-existence of chronic urticaria and metabolic syndrome: clinical implications. *Acta dermato-venereologica*. 2013;93(2):156-60. PMID: 22948845
- Devaraj S, Rosenson RS, Jialal I. Metabolic syndrome: an appraisal of the pro-inflammatory and procoagulant status. *Endocrinology and metabolism clinics of North America*. 2004;33(2):431-53, table of contents. PMID: 15158528
- Kasperska-Zajac A, Damasiewicz-Bodzek A, Bieniek K, Skrzypulec-Frankel A, Tyrpien-Golder K, Grzanka A. Elevated circulating heat shock protein 70 and its antibody concentrations in chronic spontaneous urticaria. *International journal of immunopathology and pharmacology*. 2018;31:394632017750440. PMID: 29268639
- Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet*. 2004;363(9403):157-63. PMID: 14726171
- Chung SD, Wang KH, Tsai MC, Lin HC, Chen CH. Hyperlipidemia Is Associated with Chronic Urticaria: A Population-Based Study. *PLoS one*. 2016;11(3):e0150304. PMID: 26964045
- Shipman AR, Millington GW. Obesity and the skin. *The British journal of dermatology*. 2011;165(4):743-50. PMID: 21564065
- Kasperska-Zajac A. Acute-phase response in chronic urticaria. *Journal of the European Academy of Dermatology and Venereology : JEADV*. 2012;26(6):665-72. PMID: 22118494
- Lapi F, Cassano N, Pegoraro V, Cataldo N, Heiman F, Cricelli I, et al. Epidemiology of chronic spontaneous urticaria: results from a nationwide, population-based study in Italy. *The British journal of dermatology*. 2016;174(5):996-1004. PMID: 26872037
- Kasumagic-Halilovic E, Beslic N, Ovcina-Kurtovic N. Thyroid Autoimmunity in Patients with Chronic Urticaria. *Med Arch*. 2017;71(1):29-31. PMID: 28428670
- Kolkhir P, Metz M, Altrichter S, Maurer M. Comorbidity of chronic spontaneous urticaria and autoimmune thyroid diseases: A systematic review. *Allergy*. 2017;72(10):1440-60. PMID: 28407273
- Deacock SJ. An approach to the patient with urticaria. *Clinical and experimental immunology*. 2008;153(2):151-61. PMID: 18713139
- Farah FS, Shbaklu Z. Autoimmune progesterone urticaria. *The Journal of allergy and clinical immunology*. 1971;48(5):257-61. PMID: 4398434
- Kadar, L., Kivity, S. Urticaria and Angioedema in Pregnancy. *Curr Derm Rep* 2, 236–242 (2013).
- Zbiciak-Nylec M, Wcislo-Dziadecka D, Kasprzyk M, Kulig A, Laszczak J, Noworyta M, et al. Overweight and obesity may play a role in the pathogenesis of chronic spontaneous urticaria. *Clinical and experimental dermatology*. 2018;43(5):525-8. PMID: 29327369
- Abella V, Scotece M, Conde J, Lopez V, Lazzaro V, Pino J, et al. Adipokines, metabolic syndrome and rheumatic diseases. *Journal of immunology research*. 2014;2014:343746. PMID: 24741591
- Versini M, Jeandel PY, Rosenthal E, Shoenfeld Y. Obesity in autoimmune diseases: not a passive bystander. *Autoimmunity reviews*. 2014;13(9):981-1000. PMID: 25092612
- Love TJ, Qureshi AA, Karlson EW, Gelfand JM, Choi HK. Prevalence of the metabolic syndrome in psoriasis: results from the National Health and Nutrition Examination Survey, 2003-2006. *Archives of dermatology*. 2011;147(4):419-24. PMID: 21173301
- Hersoug LG, Linneberg A. The link between the epidemics of obesity and allergic diseases: does obesity induce decreased immune tolerance? *Allergy*. 2007;62(10):1205-13. PMID: 17845592
- Ye YM, Jin HJ, Hwang EK et al. Co-existence of chronic urticaria and metabolic syndrome: clinical implications. *Acta Derm Venereol* 2013; 93: 156–60. PMID: 22948845

