Chronic Urticaria in Children: An Update about Etiology

Abstract

Urticaria, one of the most common dermatological disorders across the globe is characterized by itchy wheels with or without angioedema. The incidence of Urticaria in children is about 0.1% to 6%. Chronic Urticaria is defined as a daily occurrence of spontaneous wheals, angioedema, or both for >6 weeks. The etiology of chronic Urticaria is multifactorial in children and it can be explored in 20% to 50% children. In most of children the cause of chronic Urticaria are either idiopathic or autoimmune.

Keywords: Chronic Urticaria; Etiology; Children

Introduction

Chronic urticaria (CU) in children is a complex disease and the etiologies of chronic urticaria in children are somewhat different from adult [1]. The prevalence of CU lasting >6 weeks is uncertain and varies among studies. The prevalence of chronic Urticaria in Spanish children is 18% [2]. In Thailand 13% children were reported as having chronic urticaria [3]. In another report, urticaria only was seen in 78.4%, angioedema 6.6% and angioedema associated with urticaria observed in 15% of children with chronic urticaria. The chronic Urticaria is common in children of 6 to 11 year’s age [4]. There is no available information on the prevalence or differences in disease presentation according to age. There is no sex predisposition were found in children with chronic urticaria in recent studies unlike adults where CU is more common in female as compared to male [5]. There are many etiological factors have been associated with chronic Urticaria in children but in most of cases are idiopathic. Infectious causes are more common in children than adult [6]. This review is exploring the etiological agents of chronic Urticaria in children.

Definition & Classification of Chronic Urticaria

Chronic urticaria is defined as the occurrence of spontaneous wheals, angioedema or both for more than six weeks. Usually urticaria is classified on the basis of duration of presence of characteristic features and triggering agents. The 2014 revised European Academy of Allergy and Clinical Immunology (EAACI) guideline, classified the chronic urticaria into the two subgroups: chronic spontaneous urticaria and chronic inducible urticaria [7]. Chronic spontaneous urticaria (CSU) is defined as the recurrent development of transient wheals (hives), angioedema (AE), or both for >6 weeks due to known or unknown causes. Previously this was known as chronic idiopathic urticaria. Infections, food intolerance, drugs and autoimmune have been considered as cause of chronic spontaneous urticaria [7]. Chronic inducible urticaria, earlier known as physical urticaria is characterized by presence of characteristic features of urticaria after triggering of specific stimulus. Chronic inducible urticaria often included demographism, aquagenic, cholinergic, delayed pressure, solar, vibration, cold and heat urticaria as depicted in Table (1) [7].

Table 1: Clinical classification of chronic urticaria.

| Types of Chronic Urticaria | Trigger Factor |
|---------------------------|---------------|
| Chronic spontaneous urticaria(CSU): Spontaneous appearance of wheals, angioedema, or both ≥6 weeks due to known or unknown causes | Stress, infection, drugs |
| Sub type of CIU | Minor trauma |
| Symptomatic demographism | Swimming in cold water, cold wind |
| Cold urticaria | Sitting, lying, tight clothing |
| Delayed pressure urticaria | Sunshine |
| Solar urticaria | Hot bath/shower |
| Heat urticaria | Use of vibrating tools |
| Vibratory urticaria | Contact with offending agent |
| Contact urticaria | Exercise, emotion |
| Cholinergic urticaria | Exercise, emotion |
| Aquatic urticaria | Contact with hot or cold water |
Etiology of Childhood Chronic Urticaria

The etiology of childhood chronic urticaria is multifactorial and most common form of chronic urticaria is spontaneous urticaria. The etiologies of CU in children could be found out in 20% to 50% cases successfully [5].

The following etiological factors are associated with chronic urticaria in children:

1) Chronic spontaneous urticaria: Most of studies have reported the wide variability of percentage of unknown cause of chronic urticaria in children. Volonakis et al [4]. Had not found out the cause of chronic urticaria in 75% children. In another study the most common cause of chronic urticaria was idiopathic [8].

The following pathological condition included in causes of CSU.

I. Infections
II. Food allergy
III. Autoimmunity
IV. Drugs

2) Chronic inducible urticaria/physical urticaria: Almost identified causes are inducible urticaria, which cholinergic, symptomatic dermographism, cold, and pressure urticaria are most common forms.

Infections

Acute infections have also significant contributions in chronic urticaria. Recurrent respiratory and urinary infections have been associated with chronic urticaria [9]. Up to some extent Chlamydia and H. helicobacter pylori are also play role in children with chronic urticaria observed that the infections in children are third most common etiology of chronic urticaria [10]. Infection has been contributed about 7% to 13% as etiological factor of chronic urticaria in children [11].

Food Allergy

The role of food allergy in children with chronic urticaria is established up to some extent. Although, the correlation between food allergy and acute urticaria is well known. Food additive and preservatives have role in severity of chronic urticaria. Volonakis et al were reported that 28% children have food allergy as cause of chronic urticaria [4]. Several studies have demonstrated that about 10% to 12% of children with chronic urticaria have food allergy which is based on classical history, positive IgE test and skin prick test in some studies [8].

Autoimmunity

Autoimmune disorders including rheumatoid arthritis, systemic lupus Erythematosus, diabetes mellitus, inflammatory bowel disease, thyroid disease and celiac disease have been associated with chronic urticaria in children [12]. Chronic urticaria was observed in 7% to 8% children with autoimmune thyroiditis [13]. In another study, 4.3% of children with chronic urticaria had positive anti-thyroid antibody [14]. If symptoms other than urticaria present, further evaluation must be done.

Drugs

Drugs usually cause acute urticaria rather than chronic urticaria in children. Nonsteroidal anti-inflammatory drugs (NSAIDs), penicillin and sulfonamide may cause chronic urticaria. One recent study found the NSAIDs and chronic urticaria in children and reported that 10% to 24% children with chronic urticaria have aspirin hypersensitivity [15].

Chronic Inducible Urticaria/Physical Urticaria

Physical urticaria often comprised dermographism, delayed pressure, solar, vibration and exercise and aquatic urticaria. Khakoo et al. had observed that among all type of physical urticaria, 38% were dermographism, 19% aquagenic, 77% cholinergic, 17% combined them, 9% pressure, 9% heat, 2% hyperthermic and 4% idiopathic [16].

Cholinergic Urticaria

Cholinergic urticaria is caused by central hypothermia after hot water application, sweating. It is characterized by central small edema with large peripheral erythema with itching. Omalizumab can be used in treatment of chronic urticaria if conventional therapy is failed [17].

Conclusion

Chronic urticaria in children has diverse etiology. Most of studies have reported that idiopathic urticaria is most common form of chronic urticaria in children. Apart from it, food allergy, autoimmunity, infections and drugs have crucial role in etiology of chronic urticaria in children.

Contributions

BSS got the idea about this review and help in making final draft, HMM write the manuscript, PD & PS search the recent articles and collect the relevant information. RC help in final proof reading. HMM will act as guarantor.

Acknowledgement: Thank a lot to my wife Suman Meena for giving her valuable time to searching the recent published article.

References

1. Church MK, Weller K, Stock P, Maurer M (2011) Chronic spontaneous urticaria in children: itching for insight. Pediatr Allergy Immunol 22(1 Pt 1): 1-8.
2. Ibáñez MD, Garde JM (2009) Allergy in patients under fourteen years of age in Alergol y Clin 22(1 Pt 1): 1-8.
3. Tuchinda M, Srimaruta N, Habanananda S, Vareenil J, Assatherawatts A (1986) Urticaria in Thai children. Asian Pac J Allergy Immunol 4(1): 41-45.

4. Volonakis M, Katsarou-Katsari A, Stratigos J (1992) Etiologic factors in childhood chronic urticaria. Ann Allergy 69(1): 61-65.

5. Caffarelli C, Cuomo B, Cardinale F, Barberi S, Dascola CP, et al. (2013) Aetiological factors associated with chronic urticaria in children: a systematic review. Acta Derm Venereol 93(3): 268-272.

6. Powell RI, Du Toit GL, Siddique N, Leech SC, Dixon TA, et al. (2007) BSACI guidelines for the management of chronic urticaria and angio-oedema. Clin Exp Allergy 37(5): 631-650.

7. Zuberbier T, Aberer W, Asero R, Bindslev-Jensen C, Bronza Z, et al. (2014) The EAACI/GA(2) LEN/EDF/WAO Guideline for the definition, classification, diagnosis, and management of urticaria: the 2013 revision and update. Allergy 69(7): 868-887.

8. Jirapongsananuruk O, Bongpreuksa S, Sangcharoenkit PV, Visitsunthorn N, Vichyanond P (2010) Identification of the etiologies of chronic urticaria in children: a prospective study of 94 patients. Pediatr Allergy Immunol 21(3): 508-514.

9. Wedi B, Raap U, Wieczorek D, Kapp A (2009) Urticaria and infections. Allergy Asthma Clin Immunol 5(1): 10.

10. Sackesen C, Sekerel BE, Orhan F, Kocabas CN, Tuncer A, et al. (2004) The etiology of different forms of urticaria in childhood. Pediatr Dermatol 21(2): 102-108.

11. Kauppinen K, Juntunen K, Lanki H (1984) Urticaria in children. Retrospective evaluation and follow-up. Allergy 39(6): 469-472.

12. Brunetti L, Francavilla R, Miniello VL, Platzer MH, Ritzi D, et al. (2004) High prevalence of autoimmune urticaria in children with chronic urticaria. J Allergy Clin Immunol 114(4): 922-927.

13. Dalal I, Levine A, Somekh E, Mizrahi A, Hanakoglu (2000) A Chronic urticaria in children: expanding the “autoimmune kaleidoscope”. Pediatrics 106(5): 1139-1141.

14. Levy Y, Segal N, Weintrob N, Danon YL (2003) Chronic urticaria: association with thyroid autoimmunity. Arch Dis Child 88(6): 517-519.

15. Cavkoatar O, Arik Yilmaz E, Buyuktiryaki B, Sekerel BE, Sackesen C, et al. (2015) Challenge-proven aspirin hypersensitivity in children with chronic spontaneous urticaria. Allergy 70(2): 153-160.

16. Khakoo G, Sofianou-Katsoulis A, Perkin MR, Lack G (2008) Clinical features and natural history of physical urticaria in children. Pediatr Allergy Immunol 19(4): 363-366.

17. Metz M, Bergmann P, Zuberbier T, Maurer M (2008) Successful treatment of cholinergic urticaria with antiimmunoglobulin E therapy. Allergy 63(2): 247-249.