ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 7, Issue – 3, May – 2022 , Page No. : 215 - 217

To study the association between bronchial asthma and celiac disease in Paediatrics patients

[1]Dr. Vishwajeet Singh, [2]Dr. P.K. Berwal, [3]Dr. T.C. Saini

[1-3]S.P. Medical College, Bikaner, Rajasthan

Corresponding Author: Dr. Vishwajeet Singh, S.P. Medical College, Bikaner, Rajasthan

Citation this Article: Dr. Vishwajeet Singh, Dr. P.K. Berwal, Dr. T.C. Saini, "To study the association between bronchial asthma and celiac disease in pediatrics patients", IJMSIR- May - 2022, Vol – 7, Issue - 3, P. No. 215 – 217.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Celiac disease (CD) is an auto immune disease that results in small bowel damage via immuno logic reaction to consuming gluten among genetically susceptible individuals to determine the association between asthma and the risk of CD in children.

Methods: This study was conducted in 50 celiac children and 50 children control group; all participants were < 18 years. The children completed the ISAAC questionnaire was performed in each participant.

Results: The prevalence rates of physician-diagnosed asthma were similar in both groups (20.00% in the celiac group and 22.00%, in the control group) (P > 0.05).

Conclusion: In conclusion, the prevalence rates of asthma in patients with CD were not significantly higher when compared to controls.

Keywords: CD, Asthma, Children

Introduction

Celiac disease (CD) is an autoimmune disease that results in small bowel damage via immuno logic reaction to consuming gluten among genetically susceptible individuals. As seen in the literature, the overall incidence of CD has increased over time.[1] Human leukocyte antigen (HLA) - DQ2 and HLA-DQ8 genes are present in almost all patients with CD.[2] However, this genetic factor, in addition to consumption of gluten (gliadin and glutenin), significantly contributes to the pathogenesis of CD.[3] Most individuals who carry HLA-DQ2 and HLA-DQ8, and who consume gluten on a regular basis do not develop CD, which indicates the presence of additional unrecognized risk factors.[4,5]

Studies in the literature indicate that various environmental factors, such as microbiota composition, infant feeding, and factors affect paracellular permeability of enterocytes to gluten as potential contributors of CD.[6]

We conducted a hospital based cross-sectional to evaluate the association between bronchial asthma and CD.

Material and methods

Study design: Hospital based cross-sectional study

Study place: Department of Pediatrics, PBM Hospital, Bikaner

Study population: All children less than 18 yrs age group

Sampling technique: Random sampling

Inclusion criteria

- positive serology markers, such as anti–tissue transglutaminase immune globulin A
- confirmatory small bowel biopsy specimen that showed the characteristic histologic findings (increased

intraepithelial lymphocytes, villous atrophy, and crypts hyperplasia

Exclusion criteria

- Patients without confirmatory small bowel biopsy for CD
- other diseases that cause villous atrophy, including autoimmune enteropathy, inflammatory bowel disease, and small bowel bacterial overgrowth.

Study tool

The prevalence of accumulated asthma was evaluated using the percentage of affirmative answers to question 1 of the asthma module: "wheezing or whistling in chest at any time in the past."

The prevalence of active asthma was estimated by the percentage of affirmative responses to question 2: "wheezing or whistling in chest in the last 12 months."

The incidence of asthma as diagnosed by a physician was assessed indirectly using the number of affirmative answers to question 6: "asthma at any time in life."

The ISAAC Questionnaire has been validated in Turkish.[7] Children who were older than 12 years of age completed the questionnaire by themselves, while those who were younger than 12 years received help from their parents.

Data analysis

All data collected was entered into Microsoft Excel and was analysed with help of appropriate software and tests of significance considering level of significance as $p<0.05$

Results

Table 1: Socio-demographic profile

Age in Yrs	9.23±3.69 Yrs
Boys: Girls	21:29
Rural: Urban	19: 31
Normal weight	32(64.00%)
Under weight	14(28.00%)
Over weight	3(6.00%)
Obese	1(2.00%)
Parental h/o asthma	12(24.00%)

Table 2: Prevalence of asthma

Variable	CD patients	Healthy control	p-value
Wheezing at any time	15(30.00%)	9(18.00%)	>0.05
Wheezing (in the last 12 months)	8(16.00%)	4(8.00%)	>0.05
Exercise-induced wheezing	9(18.00%)	10(20.00%)	>0.05
Current use of asthma medication	12(24.00%)	8(16.00%)	>0.05
Nighttime coughing	8(16.00%)	10(20.00%)	>0.05
Physician-diagnosed asthma	10(20.00%)	11(22.00%)	>0.05

Discussion

A cohort study was conducted in Switzerland compared 28,281 patients with CD to 140,295 people without CD; the hazard ratio of asthma for those with vs. those without CD was 1.61 (95% CI: 1.50 - 1.72).[7] A study that investigated subsequent hospitalization due to an autoimmune disease in 148,295 patients who had been previously hospitalized with asthma reported that 2% of the patients were hospitalized with an autoimmune diagnosis; the standardized incidence rate of hospitalization with a diagnosis of CD was 1.97 (95% CI:

1.64 - 2.34). It has been suggested that CD is predominantly diagnosed in young patients with asthma. It has also been speculated that the concomitant occurrence of asthma and autoimmune diseases may be due to common genetic factors and possible environmental risk factors. [8]

Kero et al. reported that the relative risk of asthma was 7.26 (95% CI: 4.49 - 11.01) in 114 children with CD.[9]

Zauli et al. suggested that CD is associated with atopy and found the prevalence of celiac disease to be 1% in an Italian population of atopic patients. They concluded that atopy is a risk for developing CD and atopic patients should be evaluated for CD [10] Compared to the findings of previous prevalence studies of healthy children in this region, the rates of asthma and allergic rhinitis symptoms and of physician-diagnosed asthma were higher in our study.

Conclusion

In conclusion, the prevalence rates of asthma in patients with CD were not significantly higher when compared to controls.

References

1. Rubio-Tapia A, Ludvigsson JF, Brantner TL, Murray JA, Everhart JE. The prevalence of celiac disease in the United States. Am J Gastroenterol. 2012; 107:1538–1544; quiz 1537, 1545.

2. Murray JA, Van Dyke C, Plevak MF, Dierkhising RA, Zinsmeister AR, Melton LJ., 3rd Trends in the identification and clinical features of celiac disease in a North American community, 1950–2001. Clin Gastroenterol Hepatol. 2003; 1:19–27

3. Green PH, Lebwohl B, Greywood R. Celiac disease. J Allergy Clin Immunol. 2015; 135:1099–1106; quiz 1107.

4. Rostom A, Murray JA, Ka gnoff MF. American Gastroenterological Association (AGA) Institute technical review on the diagnosis and management of celiac disease. Gastroenterology. 2006; 131:1981–2002.

5. Abadie V, Solid LM, Barreiro LB, Jabri B. Integration of genetic and immunological insights into a model of celiac disease pathogenesis. Anu Rev Immunol. 2011; 29:493–525.

6. Lionetti E, Castellaneta S, Francavilla R, et al. Introduction of gluten, HLA status, and the risk of celiac disease in children. N Engl J Med. 2014; 371:1295–1303

7. Saraclar Y, Kuyucu S, Tuncer A, Sekerel B, Sackesen C, Kocabas C. Prevalence of asthmatic phenotypes and bronchial hyperresponsiveness in Turkish schoolchildren: an International Study of Asthma and Allergies in Childhood (ISAAC) phase 2 study. Ann Allergy Asthma Immunol. 2003; 91(5) : 477 -84

8. Hemminki K, Li X, Sundqvist J, Sundqvist K. Subsequent autoimmune or related disease in asthma patients: clustering of diseases or medical care? Ann Epidemiol. 2010; 20(3) : 217 -22

9. Kero J, Gissler M, Hemminki E, Isola Uri E. Could TH1 and TH2 diseases coexist? Evaluation of asthma incidence in children with coeliac disease, type 1 diabetes, or rheumatoid arthritis: a register study. J Allergy Clin Immunol. 2001; 108(5) : 781 –3

10. Kurt E, Metintas S, Basyigit I, Bullet I, Coskun E, Dabak S, et al. Prevalence and Risk Factors of Allergies in Turkey (PARFAIT): results of a multicentre cross sectional study in adults. Eur Respir J. 2009; 33 (4) : 724 -33