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Intestinal parasitic infection, allergy and total serum IgE level in asymptomatic school children, Gondar, North west Ethiopia

Jemal Ali^{1,6}, Gizachew Yismaw¹, Simon Gebretsadik², Yeshambel Belhun¹, Desalegn Woldeyohannes¹, Ketema Tafess¹, Ebba Abate², Bemnet Amare¹, Mengistu Endris¹, Beyene Moges¹, Desalegn Tegabu³, Andargachew Mulu¹, Yared Wondimkun⁴, Aderajew Waka⁵ and Afework Kassu¹

¹University of Gondar, Collage of Medicine and Health Sciences, Department of Microbiology Immunology and Parasitology, Ethiopia

²School of Medical Laboratory Technology, Ethiopia

³Department of Epidemiology and Biostatistics, Gondar, Ethiopia ⁴Department of internal Medicine, Haward University, USA

Schartife-University of Medicine Berlin, Internal Medicine Department of Rheumatology and Clinical Immunology & German Rheumatism Research Centre of Berlin, Department of Autoimmunology, Germany

⁶Ben-Gurion University of the Negev, Kreitman School of Advance Graduate Studies, Department of Microbiology Immunology and Genetics, Israel

Background: Parasitic infection, especially of geo-helminth infections and allergic disease are major public health problems and there is evidence in developing countries that they are associated. Nevertheless, there is little consensus on whether the association is causal. Yet, the rationale behind the whys of decreased allergic disorders in developing countries has not been fully elucidated. The objective was to determine the prevalence of intestinal parasitoses and allergy in school children; and evaluate their relationship with total serum IgE level.

Methods and Materials: A cross sectional study was conducted involving 405 school children in two elementary schools in Gondar town, Northwest Ethiopia. Socio-demographic data, anthropometric indices and history of allergy was collected using a structured pretested questionnaire. Stool specimens were examined for intestinal parasites by direct saline-mount and formolether concentration techniques. Total serum IgE level was measured, using ELISA in a proportion of study subjects.

Results: Of the 405 stool samples (92/405) 22.7% were found to be positive for intestinal parasites. The most prevalent intestinal parasite detected was Ascaris lumbricoides (51/405) 12.6%, followed by Hymenolepis nana (30/405) 7.4%. Most frequent dual infection was with Ascaris lumbricoides and Hookworm (3/405) 0.7% and the total multiple infection was observed in (14/405) 3.5% of the school children. High prevalence of intestinal parasites were observed in children less than 13 years of age (85.9%) compared with those 13 years of age and above (14.1%). In a subset of 100 participants (80% without parasite) and (20% with parasite infection), had median total serum IgE level (344 IU/ml, IQR 117-2076) and (610 IU/ml, 143-1833), respectively (Z= -0.198, P>0.8). The prevalence of self reported allergy among the subset was 8%. The Median IgE concentration in subjects without allergy (335 IU/ml, IQR 117-2076) and with history of allergy (610 IU/ml, 394-1836) (Z= -0.813, P>0.4). IgE concentration was not associated either with the presence of parasitic infection or history of allergy.

Conclusion: High level of IgE was observed in the school children irrespective of parasitic infection and history of allergy. The correlation of IgE level with parasitic infection and whether geo-helminth infections may increase or decrease the risk of allergy needs further clinico-immunological studies.

jemalizesh@gmail.com