The Variegatedcutaneous Facades Of Ascaris Induced Manifestationsand Its Transmogrification – A Four Year Clinicohistopathological Study In North Eastern Region Of India.

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Abstract:
Background: Ascaris lumbricoides is one of the largest and most common parasites found in humans. The adult worms has varied presentations, lives in the small intestine and eggs are passed in the feces. Ascariasis is the most common soil-transmitted helminth infection in the world.

Aim: The objective of this study was to commemorate the clinical symptoms and selected hematological indices of ascariasis in opd and ward patients from the northeastern region of indian territory.

Materials and methods: Patients hospitalized in tertiary care Hospital in Shillong, medical opds in happy valley and day care centres, from the period of 2014–2018 were included in this study. The intestinal stage of ascariasis was diagnosed based on positive coprological survey performed using the decantation technique. A total of 300 patients were included in the study, who had presented in the opds with popular urticarial rash, accompanied with itching, more in the evening hours, stool samples were evaluated, and A. lumbricoides-positive tests were obtained from 35 patients.

Results: Ascaris-positive young patients (3-15yrs.) accounted for 10% of all hospitalized patients, Ascaris-positive college going students (16-25yrs.) accounted for 32% and adult working patients (25–42 yrs.) for 56% and > 42 years comprised 2%. Seasonal patterns were observed in the prevalence of A. lumbricoides (maximum in June–October). The infection was more in patients who were nonvegetarians, travel history and frequently eating from outside other than home food. There was significant lower limit of normal haemoglobin levels and prevalence of infection with Ascaris lumbricoides. Significant markers of intestinal stage ascariasis were abdominal pain, urticaria, bronchial asthma, allergic rhinitis, atop dermatitis and co-existing ascariasis, affecting the eosinophil counts in the peripheral blood.

Conclusion: Ascariasis is still a current clinical problem characterized by non-specific clinical manifestations, which should be taken into consideration in the differential diagnosis of urticarial rash and atop dermatitis.

Key words: Ascaris lumbricoides, ascariasis, urticaria, abdominal pain, haemoglobin

I. Introduction:

Urticaria is an itchy rash caused by tiny amounts of fluid that percolates from blood vessels just under the skin surface. In chronic urticaria, it persists for more than six weeks, although often on and off. The release of histamine under the skin is involved in causing hives (urticaria). Ascariasis is a cosmopolitan intestinal parasite estimated to affect approximately 1.4 billion people worldwide (73%) in Asia.¹,² The causative factors are poor sanitary and epidemiological conditions as well as travel history, exposure to outside food, non veg diet, closed environments, exposure to animals/pets and state of health immunity of the exposed subjects.³ The clinical course in most of the infected subjects is asymptomatic; however, those excreting ova constitute a link in the epidemiologic chain, aiding in the perpetuation of the parasite’s life cycle. Ascaris infection can mimic other common diseases like respiratory infections, bronchial asthma, skin allergies and gastrointestinal diseases.⁴,⁵,⁶ The consequences of chronic and untreated infections include systemic symptoms, such as disturbances insomnic development or secondary nutritional deficiencies such as anemia, behavioral and sleep disorders.⁷ Diagnosis is hampered by lack of sensitive diagnostic tests and is often made only in the event of therapeutic failure as apart from treatment modality for other mimickers of the disease.⁴,⁵,⁸,¹¹
II. Materials And Methods

The study was carried out among patients attending clinics in tertiary military care centres, day care Wards and out patient departments at Military Hospital in Shillong and Happy valley East khasi hills (Shillong from 2014-2018) in, northeastern region of India. Clinical data including symptoms like itching with diurnal variation more in evenings and night, urticaria, atopic dermatitis, mild pain abdomen, with blood and stool results were taken into account in this analysis. The intestinal stage of ascariasis was diagnosed based on a positive coprological examination. The coprological study was carried out using the decantation technique at intervals of 1–3 days. Faecal samples (approximately 2 g) were homogenized in 3 ml of distilled water. After 2 hours the supernatant liquid was gently removed, and the sediment mixed again with water; the procedure was repeated 3 times. After that, slides were prepared for microscopic examination. Ascaris lumbricoides eggs were identified by twolaboratory specialists. Stool tests for the presence of parasite eggs and cysts were investigated, with correlation with history of skin symptoms (itching, urticaria, atopic dermatitis). The diagnosis of atopic diseases (bronchial asthma, allergic rhinitis and atopic dermatitis) was considered only if it was made by medical specialist or dermatologist in the outpatient clinic.

The nutritional status was determined by body mass index (BMI, weight (kg)/(height (m)). Blood counts were conducted on an 18 parameter hematology analyzer (3 part fully automated hematology analyzer, sysmex) and the hematomatological parameters of the peripheral blood were also analyzed: hemoglobin (g/dl), haematocrit (%), mean corpuscular volume MCV (fl), platelets, leukocyte count, WBC (number/mm3) as well as relative (%) and absolute blood eosinophil counts (number/mm). All patients with stool positive for A. lumbricoides and clinical symptoms were treated with anthelmintic drugs (albendazole, mebendazole or pyrantoil) and presumptive dose of ivermectin. Thereby, we analyzed the history of gastrointestinal signs as a reason for hospital admission (abdominal pain, vomiting/nausea, diarrhoea), dermatological manifestations and history of respiratory diseases (recurrent infections, wheezing, bronchial asthma)

III. Results

Out of 35 patients screened positive for Ascaris there were 45.5% of males and 54.5% females which were floating population in this region. The analysis was conducted in three age groups, young patients (3-15 yrs) accounted for 10% of all screened and hospitalized patients, Ascaris positive College going students (16-25) accounted for 32% and adult working patients (25–42 yrs.) for 56% and > 42 years comprised 2%. Seasonal patterns were observed in the prevalence. Patients with stools positive for A. lumbricoides eggs presented with a wide spectrum of gastrointestinal symptoms (Fig. 2). Chronic Abdominal pain was most frequently observed (72.0%). Vomiting and dehydration were the most common causes of hospitalization in the youngest age group (3-15 years) (2%) (Fig 1). Skin symptoms in the form of chronic urticaria or pruritic eruptions occurred equally frequently in the group with infection (18%) (Fig 2). The history of respiratory symptoms accounted for in 6.0% of the patients with a positive stool test. 4.0% of all the patients positive for coprological index showed low grade anaemia (11.2-11.8 g %).

<table>
<thead>
<tr>
<th>Groups (years)</th>
<th>3-15</th>
<th>16-25</th>
<th>25-42</th>
<th>&gt;42</th>
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</thead>
<tbody>
<tr>
<td>Median age</td>
<td>8.5</td>
<td>22.5</td>
<td>29.8</td>
<td>44.2</td>
</tr>
<tr>
<td>Percentage of hospitalized</td>
<td>3.5%</td>
<td>8.0%</td>
<td>15.78%</td>
<td>11.9%</td>
</tr>
<tr>
<td>Belonging to Village (%)</td>
<td>65.1%</td>
<td>40%</td>
<td>7.6%</td>
<td>50%</td>
</tr>
<tr>
<td>Belonging to City areas</td>
<td>34.7%</td>
<td>60%</td>
<td>92.4%</td>
<td>50%</td>
</tr>
<tr>
<td>Male (%)</td>
<td>46.4%</td>
<td>39.5%</td>
<td>48.0%</td>
<td>48.0%</td>
</tr>
<tr>
<td>Female (%)</td>
<td>53.6%</td>
<td>60.5%</td>
<td>52.0%</td>
<td>52.0%</td>
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<tr>
<td>History of travel (%)</td>
<td>35.8%</td>
<td>35%</td>
<td>75%</td>
<td>40%</td>
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<tr>
<td>Non veg diet (%)</td>
<td>58.6%</td>
<td>79.2%</td>
<td>70%</td>
<td>60%</td>
</tr>
<tr>
<td>Positive stool sample (%)</td>
<td>34.0%</td>
<td>63.6%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Explanations: Chi2 Pearson Test * p=0.48; p=0.12; p<0.002
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Fig 2: Clinical symptoms of patients ascaris positive

FIG 3a /3b/3c: Gross of adult ascaris worm identified as whole in stool of patient, clinical manifestation of urticarial rash in patients positive for the same, microscopic examination of stool positive for ascaris cysts.

Discussion: The aim of this study was to evaluate the clinical symptoms of ascariasis in floating population attending clinics and outpatient departments in tertiary care hospital in Shillong and happy valley east khasi hills Meghalaya (North east). In the study population of the hospitalized patients, the risk of ascariasis calculated using the odds ratio identified to children between 25 and 42 years of age as particularly at risk, and this can be associated with lack of good hygiene habits, 92% of city residents, eating food from outside, working or college attending group that are typically of this age group. A seasonal occurrence of outbreaks of infection was observed, prevalence being the highest in the second half of the year in late summer (June-October) and in the autumn. This observation is consistent with the idea of greater exposure to infection in this period in the warm months of the summer (exposure to water, soil, greater consumption of vegetables and fruit from home gardens, often naturally contaminated by soil, in this particular region consumption of more of red meat like pork in non vegetarians). The clinical symptoms of ascariasis depend on the life cycle of the parasite. In the first phase of infection with the invasive egg, during migration of larvae into the lungs, there are general symptoms (body temperature increasing to 38.3°C), a dry nonproductive cough, symptoms of airway obstruction (dyspnea, wheezing, and even hemoptysis) and skin symptoms (pruritus, urticaria)[1]. The non-specific nature of the symptoms, their similarity to common infections or allergies, and additionally the fact that this is a nondiagnostic phase (for approximately 40 days from the infection onset, there is an absence of parasite eggs in stools) significantly hinder diagnosis. In hospitalized patients with Ascaris positive eggs in the stool, 6% had a documented history of symptoms of respiratory infection. However, it is not clear whether these were connected with the infection or had other causes. Pulmonary manifestations of ascariasis are rarely a complication of the intestinal phase. A past Ascaris infection leaves no resistance and does not protect against reinfection, and the risk of reinfection depends on constant exposure to Ascaris lumbricoides eggs [12,13]. While discussing other symptoms in patients with a positive stool test, we must also consider a random occurrence of disease with asymptomatic infection. In the second (intestinal) phase of ascariasis, symptoms from the gastrointestinal tract occur, which are characterized by great diversity. In the intestinal phase, ascarisissymptoms may mimic an acute abdomen (peritonitis and appendicitis), which should be ruled out by...
sonography which is associated with the intestinal migration of mature individuals that have the ability to crawl into the pancreatic duct, the biliary ducts and sand the appendix [14]. They are reported in a significant percentage of patients, particularly the abdominal pain (87%) and, less frequently, diarrhea and urticaria (15%) [15]. Skin lesions described in the course of ascariasis have different symptoms: urticaria, cutaneous pruritus, Schönlein-Henoch syndrome [16]. The consequences of chronic and untreated infections may include systemic symptoms, such as disturbances of somatic development, secondary nutritional deficiencies, i.e., anemia, and behavioral and sleep disorders. In the study groups, behavioural disorders and parasomnias were observed in just afew patients, and lower hemoglobin concentrations with ascariasis were observed with gastrointestinal symptoms. Therefore, when analyzing the clinical symptoms with a positive stool test, it should be taken into account that the majority of the infected subjects are asymptomatic and it is possible to accidentally discover ova in stool without any links to the symptoms.

IV. Conclusion

This study was based on a floating population and may not be representative of the general population [31]. Serological testing of antibodies like IgE and IgM has its limitations in such positive patients due to cross-reactivity with other parasites [32]. The possibility of false-negative results, which characterize the initial phase of infection, should also be considered. Theretrospective nature of the analysis prevented full insight into the symptoms of the disease, i.e., tracing the sequence of the emergence of specific symptoms or monitoring the effectiveness of therapy. Despite these limitations, the study derives attention to the problem of ascariasis, as a disease that is still prevalent, and which despite non-specific multiorgan manifestations should be considered in the differential diagnosis, especially of skin and systemic manifestations.

References

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