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Original Research Article

Giardiasis in the Elderly: A Comprehensive Review with Presentation of Three Cases

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Abstract: Gisrdiasis in the elderly is a very complicated condition. Comorbidities have a major influence on the course, management, and outcomes of giardiasis in elderly individuals. Immunologic, metabolic and cardiovascular diseases, renal and gastrointestinal disorders, neurological and respiratory ailment, and nutritional deficits all interact with giardiasis, resulting in severe clinical symptoms and additional difficult therapy. A complete, multidisciplinary approach is required for the efficient management of giardiasis in elderly patients with comorbidities, with an emphasis on personalised medications, supportive care, and preventative initiatives.

Keywords: Giardiasis, elderly persons, comorbidities.

INTRODUCTION

Giardiasis is a very common intestinal infection caused by a microscopic parasite called *Giardia lamblia*, also known as *G.intestinalis* or *G.duodenalis*. It is one of the most commonly diagnosed waterborne diseases worldwide, especially in regions with inadequate hygiene and large sources of contaminated water. Prevention focuses on improving sanitation, practicing proper hygiene, and ensuring the safety of water supplies through filtration and disinfection.

Therefore, Giardiasis is a significant gastrointestinal infection caused by the *Giardia* parasite, characterized by intestinal symptoms, and commonly transmitted through contaminated water or food. Understanding its transmission, symptoms, diagnosis, and treatment is crucial for effective management and prevention of this infectious disease [1-3].

The lifecycle of *Giardia* is uncomplicated, consisting of only 2 stages: Trophozoite, this is the active feeding stage of the parasite, residing freely within the human small intestine. Cyst: This is the dormant and hardy stage, passed into the environment. The tough, infective cyst that can last in the environment for months and very thin, lively trophozoite stage which multiply in intestinal tracts of infected humans and animals. It is transmitted by the fecal-oral route through ingestion of contaminated food, water or by direct contact with infected hosts (humans/animals). When ingested, the cysts will then release trophozoites in the small intestine, attaching to the intestinal lining and filling it, thus preventing nutrient absorption. This interference leads to symptoms such as diarrhoea, abdominal cramps, bloating, and nausea. Giardiasis can be acute or chronic, with symptoms varying in severity and duration.

Nearly half of the individuals infected with giardiasis have no symptoms. Those who do experience symptoms usually start feeling them 1 to 2 weeks after getting infected. The common symptoms of giardiasis include: Abdominal pain, Nausea, Flatulence (gas), Large volume of watery stools that have a foul smell and appear greasy [4, 5].

In acute cases of giardiasis, which are short-term, the most common symptom is diarrhoea, affecting 90% of people with symptoms.

Although it mainly affects children but, in the elderly, *Giardia* can cause severe iron deficiency anaemia, cognitive problems, compromised physical fitness and malabsorption syndrome. Giardiasis can

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impair the absorption of nutrients, including iron, in the intestines. Chronic infection with *Giardia* can lead to iron deficiency anaemia, characterized by fatigue, weakness, and pallor. This is especially concerning in the elderly, where anaemia can exacerbate existing health issues and reduce quality of life. In the elderly *Giardia* usually leads to micronutrient deficiency particularly iron and iodine deficiencies which are related to cognitive functions. Malabsorption of nutrients caused by *Giardia* impacts cognitive function, especially in older adults whose brains may already be vulnerable due to aging. Nutrient deficiencies, including those of zinc, vitamins, and minerals crucial for brain health, can contribute to cognitive impairment, memory problems, and difficulty concentrating. It has been reported that doubling of chronic fatigue syndrome in general population may occur due to giardiasis [6-8]. Compromised Physical Malnutrition resulting from Giardia infection can compromise physical fitness and overall strength in elderly individuals. These factors can further contribute to a decline in overall health and independence.

MATERIALS AND METHOD

A systematic prospective study was carried out on patients with *Giardia* infections in an Indian tertiary care hospital. This study examined and evaluated the clinical histories of three individuals with giardiasis, as recorded in hospital records. To protect patient privacy, the data was made anonymous in accordance with the hospital ethics committee requirements. In addition, the researchers examined the patients' medical records to learn about their sociodemographic characteristics, comorbidities, clinical symptoms, therapy, and results.

Microbial Investigation

The BioFireFilmArray Gastrointestinal (GI) Panel was used to detect the presence of *Giardia* in stool samples from hospital patients. Patients provided fresh stool samples in sterile containers. Samples were kept at 2-8°C and examined within 24 hours. The FilmArray GI Panel generated a complete report detecting different gastrointestinal infections, including *Giardia* species. Positive *Giardia* findings confirmed the presence of the pathogen's DNA in the samples.

Data Analysis

We analysed the following symptoms and characteristics in both confirmed cases of Giardiasis and respondents with acute gastroenteritis: Diarrhoea, Fever, Vomiting, Abdominal pain, or cramps and shortness of breath. We also looked at additional factors, such as Electrolyte levels, White blood cell (WBC) count, Neutrophil percentage, C-reactive protein (CRP) level and Haemoglobin level. Furthermore, we examined the patients' medical history and any existing health conditions (comorbidities).

RESULTS

Among the three elderly patients with *Giardiasis*, two were men and one was a woman. Their median age was 57, and all were above 50 years old. All the three patients were hospitalised during their treatment.

Patient 1 was a 56 years old male presented with fever and shortness of breath. He has got co-morbidities like Type 2 Diabetes Mellitus, Dyslipidemia, and Benign Prostatic Hyperplasia. His total WBC count was low. With Biofire, *Giardia* gene was detected, Stool culture was alkaline, occult blood positive, with presence of 1-2/HPF pus cells, and occasional RBC.

Patient 2, a 63 years old male presented with fever and shortness of breath. He had Ischemic heart disease and post permanent Pacemaker Implantation. With Biofire, *Giardia* gene was detected in the Stool culture. The patient was treated with sepsis with septic shock, atrial fibrillation with fast ventricular rate, acute kidney injury, heart failure with preserved ejection fraction and grade II LV diastolic dysfunction.

Patient 3, a 53 years old female, suffering from severe iron deficiency anaemia, presented with loose stool and vomiting. CRP was 44mg/ml, Electrolyte such as potassium was 3.1mEq/l. With BioFire, *Giardia* gene was detected from the stool sample. BioFire also showed infection by *E. coli* and *Shigella*. The patient was treated with Acute Gastroenteritis.

Patient	Age	Sex	Origin of Giardia Isolates	Symptoms	Comorbidities	Outcome
1.	56	MALE	Stool Sample	Fever, Shortness of Breath	Type 2 Diabetes Mellitus, Dyslipidemia, / Benign Prostatic Hyperplasia	Favourable
2.	63	MALE	Stool Sample	Fever, Shortness of Breath	Ischemic Heart Disease, Acute Kidney Injury, Heart Failure with Preserved Ejection Fraction and Grade Ii Lv Diastolic Dysfunction	Favourable
3.	53	FEMALE	Stool Sample	Loose Stool, Vomitting	Severe Iron Deficiency Anaemia	Favourable

DISCUSSION

The frequency of giardiasis among the elderly varies according to geography and population density. In affluent nations, epidemics are frequently associated with polluted water supplies or person-to-person transmission in institutional settings like nursing homes. Elderly people, particularly those with weakened immune systems or other concomitant diseases, are more susceptible to infection due to decreased physiological resilience and perhaps inadequate hygiene practices. Conditions such as HIV/AIDS, diabetes, and chronic corticosteroid usage can compromise the immune system, resulting in more severe and persistent infections. Diarrhea-induced dehydration can worsen heart failure and cause electrolyte imbalance, complicating hypertension treatment and raising the risk of cardiovascular events. Dehydration and electrolyte imbalances can impair kidney function. Diabetics are more susceptible to infections, including giardiasis, as a result of hyperglycemia-induced immunological dysfunction. Diarrhoea and malabsorption can disrupt blood glucose levels, complicating diabetes care and raising the risk of diabetic complications. In all the three patients, we see that Giardiasis infection is associated with other comorbidities, however, all the patients have had favourable outcome on proper treatment.

CONCLUSION

Comorbidities have a major influence on the course, management, and results of giardiasis in older individuals. Immune system illnesses, metabolic and cardiovascular diseases, renal and gastrointestinal disorders, neurological and respiratory ailments, and nutritional deficits all interact with giardiasis, resulting in more severe clinical symptoms and more difficult therapy. A complete, multidisciplinary strategy is required for the efficient management of giardiasis in older patients with comorbidities, with an emphasis on personalised medications, supportive care, and preventative initiatives to reduce the burden of this parasite infection. More study is needed to establish optimised management procedures that account for the unique problems given by comorbid illnesses in this group.

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REFERENCES

1. Nakao, J. H., Collier, S. A., & Gargano, J. W. (2017). Giardiasis and subsequent irritable bowel syndrome: a longitudinal cohort study using health insurance data. *The Journal of infectious diseases*, *215*(5), 798-805.
2. Escobedo, A. A., Almirall, P., Gonzalez-Fraile, E., & Ballesteros, J. (2018). Efficacy of mebendazole in paediatric patients with giardiasis: A systematic review and meta-analysis. *Acta tropica*, *188*, 50-57.
3. Vivancos, V., González-Alvarez, I., Bermejo, M., & Gonzalez-Alvarez, M. (2018). Giardiasis: characteristics, pathogenesis and new insights about treatment. *Current topics in medicinal chemistry*, *18*(15), 1287-1303.
4. Currie, S. L., Stephenson, N., Palmer, A. S., Jones, B. L., & Alexander, C. L. (2017). Under-reporting giardiasis: time to consider the public health implications. *Epidemiology & Infection*, *145*(14), 3007-3011.
5. Halliez, M. C., & Buret, A. G. (2013). Extra-intestinal and long term consequences of Giardia duodenalis infections. *World journal of gastroenterology: WJG*, *19*(47), 8974-8985.
6. Naess, H., Nyland, M., Hausken, T., Follestad, I., & Nyland, H. I. (2012). Chronic fatigue syndrome after Giardia enteritis: clinical characteristics, disability and long-term sickness absence. *BMC gastroenterology*, *12*, 1-7.
7. Robertson, L. J., Hanevik, K., Escobedo, A. A., Mørch, K., & Langeland, N. (2010). Giardiasis–why do the symptoms sometimes never stop?. *Trends in parasitology*, *26*(2), 75-82.
8. Mørch, K., Hanevik, K., Rortveit, G., Wensaas, K. A., Eide, G. E., Hausken, T., & Langeland, N. (2009). Severity of Giardia infection associated with post-infectious fatigue and abdominal symptoms two years after. *BMC Infectious Diseases*, *9*, 1-9.

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