

Tropical Sprue: Revisited

N. Khokhar, M. L. Gill

Division of Gastroenterology, Department of Medicine, Shifa International Hospital and Shifa College of Medicine, Islamabad.

Abstract

Objective: To review the experience of patients presenting with clinical manifestations of tropical sprue and assess their diagnosis and management, response to treatment and follow up.

Methods: This single center retrospective descriptive study was done at Shifa International Hospital, Islamabad from January 1994 to January 2003. All patients who presented with diarrhea, anorexia, weight loss and anemia and who proved to have partial villous atrophy on intestinal biopsy and had responded to treatment with antibiotic and folic acid, were included in this review.

Results: A total of 42 patients were encountered during these years. There were 31 (74.0%) males and 11 (26%) females. The age ranged from 17-66 years. All patients presented with diarrhea, weight loss, anorexia and had megaloblastic anemia. In all patients, a distal duodenal biopsy showed partial villous atrophy. All were treated with tetracycline 1 g per day and folic acid 5 mg per day and responded to treatment within 4 weeks. Total treatment lasted 3 months and resulted in complete resolution of symptoms and gain of weight. The follow up lasted for a mean of 5 years and no relapses were noted.

Conclusion: Tropical sprue presents with diarrhea, anorexia, weight loss, and megaloblastic anemia. The partial villous atrophy has been a constant finding. The response to treatment to tetracycline and folic acid has been uniformly successful (JPMA 54:133;2004).

Introduction

Tropical sprue was described as a disease entity in 1880s and was shown to have morphological features of villous atrophy of small intestinal mucosa.¹ Recent cell kinetic studies of the turn over of the intestinal epithelium in sprue have convincingly demonstrated that the flat mucosa in tropical sprue is caused by increase efflux (cell death) with compensatory crypt hyperplasia.¹ It is an endemic condition in most parts of Asia including India and Pakistan, some Caribbean Islands and parts of South America where it has afflicted travelers.²⁻⁶

Persistent and prolonged diarrhea with malabsorption in the travellers to endemic areas should be suspected to be due to tropical sprue unless proven otherwise.⁵⁻⁶ Diarrheal illnesses due to tropical sprue have been found not only in travelers but have been noted in prisoner of war⁷ during second world war in epidemic form in Burma (now Myanmar) and in eastern India (now Bangladesh) and in servicemen in various other parts of the world.⁸ In addition, it was found in American servicemen returning from Vietnam and, in these patients, diagnosis was delayed considerably due to failure to consider tropical sprue as a cause of diarrhea and weight loss.⁸

Tropical sprue has generally presented as mild cases with malabsorption but can present as severe diarrhea either in an acute condition or chronically with anorexia, weight loss and anemia. Earlier experience from Pakistan has been reported many years ago⁹, which highlighted the clinical, biochemical and histopathological features of this condition. This study aims to review recent experience in

our institution for the past many years and evaluate its clinical and histological features and response to treatment.

Patients and Methods

All patients who presented with diarrhea, anorexia, weight loss, abdominal bloating and were noted to have megaloblastic anemia were evaluated with stool examination and upper G.I. endoscopy, with small bowel biopsy from distal duodenum. Diagnosis was made with combination of clinical features which included weight loss, anorexia, diarrhea, megaloblastic anemia and small bowel biopsy and distal duodenum which showed partial villous atrophy with extensive inflammation in lamina propria with follicle formation, partial blunting of villi and increased intra-epithelial lymphocytes. No patients with a diagnosis of celiac sprue were included in this study.

Patients found to have partial villous atrophy at histopathological examination, were treated with tetracycline 1g per day in divided doses and folic acid 5 mg per day. After a satisfactory response was noted, treatment was continued for 3-4 months or until the complete recovery of the patients clinical symptoms and blood pictures. None of the patient underwent second small bowel biopsy as the clinical and hematological features showed complete resolution of their condition.

Results

A total of 42 patients were seen during these years who fulfilled the diagnostic criteria. There were 31 (74.0%) males and 11 (26.0%) females. The age ranged from 17-66 years.

All patients responded to the treatment within 3-4 weeks with improvement in diarrhea, appetite and weight stabilization and weight gain. Hemoglobin improved in patients with anemia and megaloblastic picture reverted to normal. Treatment was continued in most patients for 3 months and in some for 4 months. All patients responded fully and recovered without any mortality or other complicating condition except one patient relapsed after 6 months and was retreated with the same regimen and responded. He remained stable for additional follow up of 18 months.

Discussion

Tropical sprue has been a frequent happening in travelers to the tropical regions and should be considered in patients with chronic diarrhea.¹⁰ All of our patients had diarrhea, anorexia and weight loss. Our clinical study showed megaloblastic anemia in all patients. This has been a common feature in these patients due to folate and B12 deficiencies.^{7,10}

Etiology and pathogenesis of tropical sprue has been explored but it is not completely understood. These patients are noted to have same intestinal transit time as healthy subjects.¹¹ The pathogenic insult in tropical sprue appears to be a persistent over growth of the small intestine by enteric pathogens.¹ Pleomorphic virus like particles with some resemblance to orthomyxoviruses and corona viruses have been noted in the feces of adults and childrens and not neonates.¹² Histological features of small bowel biopsies had shown that there was process of fusion of villi which may be responsible for development of features of partial villous atrophy.¹³ Ultra structure of jejunal mucosa using electron-microscopy had shown minimal increase in the lysosomes in the surface epithelial cells, an occasional dark staining degenerating epithelial cells in the upper two third of villi and increase in cellular infiltration of surface epithelium and lamina propria.¹⁴

Some of these changes have subsequently lead to enterocyte damage affecting the entire small intestine and liberation of enteroglucagon, a tropic hormone, has been noted.¹⁵ This damage to enterocytes leads to shortening of villi and increased cell production in the crypts with hypertrophy of the crypts.^{1,16} These cellular changes are associated with depletion of folic acid and B-12 which leads to anorexia that can be responsible for weight loss in these patients.¹⁷ These cellular changes also lead to defect in water and sodium absorption from the bowel and has been associated with increased fecal bile acid and free fatty acid output in these patients¹⁸ leading to malabsorption of these nutrients. These cellular changes also lead to significant impairment in absorption of dipeptide due to decreased activities of micro villous enzymes, dipeptidases and disaccharidases leading to diarrhea.^{1,19}

Partial villous atrophy of small bowel mucosa is also seen in celiac sprue as well as in normal human subjects.^{15,20} In our patients, this was kept in mind and differentiation was made. In this series, the response to specific treatment and prompt resolution of symptoms with complete reversal of hematological abnormalities was very helpful. Our patients responded well and completely to treatment with folic acid and tetracycline as has been the case in previously reported studies.^{1,20} As all the patients responded clinically and hematologically with improvement of anemia and weight gain, no second small biopsy was thought to be necessary or helpful.

In conclusion, our experience with cases of tropical sprue in our institution has shown that all of them had presented with anorexia, diarrhea, weight loss and megaloblastic anemia. All patients who had small bowel biopsy showed partial villous atrophy. All the patients fully recovered after treatment with tetracycline and folic acid.

References

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