



An Overview on Diagnosis and Management of Gastroenteritis in Primary Health Care Center: Literature Review

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ABSTRACT

Background: Gastroenteritis is a condition characterized by acute bouts of watery diarrhea and vomiting. It is a self-limiting condition in most cases. However, some patients may require more aggressive therapy. The commonest etiology is rotavirus. However, other viruses, bacteria, and parasites are culprits. **Objectives:** We aimed to review the literature reviewing Gastroenteritis, along with the common etiologies, clinical features, diagnosis, and management in both the acute and definitive settings. **Methodology:** PubMed database was used for articles selection, from where papers were obtained and reviewed. **Conclusion:** The diagnosis of gastroenteritis can be made clinically in most cases. The majority of patients can be treated at home with fluid replacement and unrestricted diet. Further diagnostic testing should only be done in patients whose symptoms are not resolved by two weeks' time or if other alarming symptoms are present. Assessment of dehydration is an essential step in the diagnosis and management. Treatment for severe cases includes IV hydration, antimicrobial therapy, and antiemetics.

Keywords: Gastroenteritis, Viral gastroenteritis, Rotavirus, Oral rehydration solution

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1. INTRODUCTION

Diarrhea is one of the top leading causes of mortality worldwide, especially for children in resources-poor countries. (Collaborators GBDDD, 2018) From among the diseases that cause diarrhea, gastroenteritis is a frequent one. Gastroenteritis can be defined as a diarrheal disease of rapid onset, with or without its associated symptoms. (Hartman *et al.*, 2019) In this review, we will go through the epidemiology of gastroenteritis, epidemiology, etiologies, clinical presentation, diagnosis, and management.

2. METHODOLOGY

PubMed database was used for articles selection, and the following keys used in the mesh (((Gastroenteritis) AND (Diagnosis)) OR (Management)). In regards to the inclusion criteria, the articles were selected based on inclusion of one of the following topics; Gastroenteritis, Diagnosis, and Management. Exclusion criteria were all other articles which did not have one of these topics as their primary endpoint.

Epidemiology

Gastroenteritis is a common condition presenting to the GP's office and emergency rooms. In the US, it accounts for over 1.5 million visits and 200,000 hospitalizations annually. (Hartman *et al.*, 2019) Globally, viral gastroenteritis was responsible for over 100,000 deaths of children under the age of 5 years in 2016. (Collaborators GBDDD, 2018) This means that gastroenteritis not only is a common presentation to the hospital, but also a serious condition that requires proper care and management, especially in children under the age of 5 years.

Etiologies

The most common causes of acute gastroenteritis are viral infections, most notably, rotavirus infection. (Collaborators GBDDD, 2018; Bányai *et al.*, 2018; Oude Munnink and Van der Hoek, 2016) Other viral infections include norovirus, sapovirus, astrovirus, and adenovirus. (Oude Munnink and Van der Hoek, 2016) Bacterial infections can also cause gastroenteritis. Those bacteria usually result in a more severe and viscous condition compared with the self-limiting viral infections. (Collaborators GBDDD, 2018; Hartman *et al.*, 2019) *Enterohemorrhagic E. coli* (EHEC), *Enterotoxigenic E. coli* (ETEC), *Salmonella* strains, *Shigella spp.*, *C. difficile*, *Campylobacter jejuni*, and *Yersinia enterocolitica* are the

culprits for bacterial gastroenteritis. (Guarino *et al.*, 2014; Granado-Villar *et al.*, 2012) Parasites can also cause gastroenteritis. Notably, *Giardia* and *Cryptosporidium* are the commonest causes of parasitic gastroenteritis, especially in resources-limited countries. (Granado-Villar *et al.*, 2012)

Although the list of organisms is long, rotavirus gastroenteritis is the most common in both children and adults in all countries, resources-rich and -limited. (Collaborators GBDDD, 2018; Granado-Villar *et al.*, 2012)

Clinical Features

The symptoms of gastroenteritis include acute diarrhea, nausea, vomiting, fever, anorexia, headache, myalgias, and abdominal pain. (Hartman *et al.*, 2019; Arena *et al.*, 2014) Acute diarrhea can be defined as the passage of loose stools three or more times per day. The diarrhea can be watery or bloody depending on the causative organism. (Granado-Villar *et al.*, 2012) Most patients report diarrhea as well as vomiting at presentation, but either of those can present alone. (Bresee *et al.*, 2012) Bloody diarrhea is associated with bacterial and parasitic infections. (Granado-Villar *et al.*, 2012; Bresee *et al.*, 2012) Some symptoms can be linked to a specific organism, such as seizures in the case of *Shigella spp.*. (Bresee *et al.*, 2012) Some patients are dehydrated at presentation, especially children. (Hartman *et al.*, 2019)

It is important to keep in mind the alarming signs and symptoms, as it indicated non-viral causes and severe gastroenteritis. The alarming S&S include severe dehydration as evident by dry mucous membranes and hypotension, abnormal electrolytes, abnormal renal functions, bloody diarrhea, weight loss, severe abdominal pain in relation to clinical picture, chronic symptoms of more than one-week, recent hospitalization, antibiotic use in the past 6 months, elderly patient's especially above 65 years, and comorbidities. (Granado-Villar *et al.*, 2012; Arena *et al.*, 2014; Brady and Pade, 2018) These S&S are important to establish as the evaluation and management of these cases are different and more intensive.

Diagnosis

In most cases, the diagnosis of gastroenteritis is clinical based on the aforementioned presentations. (Guarino *et al.*, 2014; Arena *et al.*, 2014; Brady and Pade, 2018) As such, routine lab and stool testing is not required. However, if the alarming symptoms are present, this indicates further testing to establish the organism and design a management plan. The investigation list includes serum electrolytes and renal functions, stool analysis and culture, stool occult blood, abdominal series, and urine analysis. (Bresee *et al.*, 2012; Brady and Pade, 2018) While CBC is a vital tool in most conditions, it has a very limited role in the diagnosis of gastroenteritis as it only shows mild leukocytosis and hemoconcentration in severe dehydration. (Vecchio *et al.*, 2016) Furthermore, etiologic testing is required when there is an outbreak of gastroenteritis particularly in closed populations like hospitals. (Guarino *et al.*, 2014)

Assessment of the degree of dehydration is essential in both the diagnosis and management of gastroenteritis. (Guarino *et al.*, 2014) Dehydration can be classified into mild, moderate, and severe representing fluid-loss of 3-5%, 6-9% and >10%, respectively. (Brady and Pade, 2018) In mild dehydration, the

only sign is dry mucous membrane. In moderate dehydration, the pulse rate is rapid, dry mucous membranes, sunken eyes, reduced skin turgor, cold extremities, reduced urine output, and irritability. In severe dehydration, the signs become more severe compared to moderate dehydration in addition to marked hypotension, cyanosis, anuria, lethargy, and possibly shock. (Santillanes and Rose, 2018)

Management

Viral gastroenteritis is a self-limiting condition. It can be treated with simple fluid repletion and an unrestricted diet at home. (Hartman *et al.*, 2019) Fluid repletion should be done with sport drinks or broths as they are more nutritious than plain water. In cases of mild dehydration, oral rehydration solutions (ORS) are superior to the aforementioned options. (Vecchio *et al.*, 2016)

If the alarming S&S are present, hospitalization and etiologic diagnosis must be made. (Brady and Pade, 2018; Vecchio *et al.*, 2016) After the cultures and investigations are taken, restoring of the hydration status to normal is the first step. Generally, IV hydration should be started in any patient with severe dehydration or if they cannot tolerate ORS. (Brady and Pade, 2018) If the patients are vomiting frequently, antiemetics should be started to reduce the fluid loss and reduce the direct damage from vomiting. (Carter and Fedorowicz, 2012; Tomasik *et al.*, 2016) Antimotility drugs should not be administered as they may mask the fluid loss due to fluid retention in the intestine. (Vecchio *et al.*, 2016) Empirical antibiotics should not be given due to the high risk of side effects and pseudomembranous colitis unless the symptoms are very severe. (Shane *et al.*, 2017) Most centers use fluoroquinolone as the first choice for empiric antibiotic therapy. However, empiric treatments should cover *C. difficile* and *cholera* based on the clinical suspicions. (Riddle *et al.*, 2016) After the patient improves, s/he should be discharged only when the vital signs return to normal for more than 6 hours.

3. CONCLUSION

Gastroenteritis is a common condition and a leading cause of mortality worldwide. Most of the cases are viral in nature and, thus, self-limiting with rotavirus being the commonest cause. Other causes include bacterial and parasitic. Most patients present with diarrhea and vomiting along with nausea, headache, and myalgia. The diagnosis in most cases can be made with the clinical features. However, when alarming symptoms are present, further evaluation is required. Assessment of the hydration status is an essential part of the treatment. Most mild cases can be treated at home with sport fluids and unrestricted diet. For severe cases, hospitalization is required with aggressive therapy.

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