Comprehensive Overview of Abdominal Pain and its Management

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Definition

Abdominal pain is a broad term encompassing various conditions that can involve parieties, intraabdominal structures, peritoneal diseases, and retroperitoneal structures.[1] Acute abdominal pain, defined as nontraumatic abdominal pain lasting fewer than seven days, is a common clinical presentation with a broad differential diagnosis.[2]

Pathophysiology of Abdominal Pain[3]

1. Somatic (Parietal) Pain

Caused by irritation of the parietal peritoneum due to inflammation, infection, or chemical reactions, and innervated by myelinated nerve fibers.

It is localized, constant, and maybe accompanied by tenderness, guarding, and rigidity as the condition progresses.

Patients usually prefer to remain immobile to avoid worsening the pain.

2. Visceral Pain

It is caused by the stretching of the walls of hollow viscera and is innervated by unmyelinated nerve fibers.

This pain is diffuse, intermittent, and can be dull, aching, or colicky in nature.

Patients often toss and turn in discomfort due to its unpredictable nature.

The pain correlates with the somatic embryonic origin, where:

- **Foregut structures** cause pain in the upper abdomen.
- **Midgut structures** cause pain in the middle abdomen.
- **Hindgut structures** cause pain in the lower abdomen.

Referred Pain

It is pain perceived at a location away from its site of origin.

The cause of referred pain is often a common anatomical origin or shared nerve root innervations.

Common Abdominal Conditions: Clinical Features and Diagnostic Investigations[3]

Condition	Age & Risk Factors (RF)	Symptoms	Investigations
Acute Gastritis	Any age	Epigastric burning pain, maybe be accompanied with vomiting	Upper GI endoscopy
Peptic Ulcer Disease	Age <50, RF: H. pylori, NSAIDs, smoking	Severe epigastric pain 2-5 hrs after meals, nausea, vomiting	Upper GI endoscopy
Biliary Tract Disease	RF: childbearing age, obesity	Epigastric/RUQ pain, radiating to shoulder, vomiting, fever	Liver function tests, ultrasound
Acute Pancreatitis	Age: 45-60, RF: gallstones, alcohol	Severe epigastric pain, radiates to back, nausea, vomiting	S. lipase, S. amylase, liver function, ultrasound, CT-Scan abdomen
Bowel Obstruction	Any age, RF: previous surgery, TB, Crohn's disease	Crampy abdominal pain, nausea, vomiting, constipation	X-ray abdomen, Contrast-enhanced CT-Scan abdomen
Viscus Perforation	Any age, RF: peptic ulcer, enteric fever	Severe abdominal pain, distension, vomiting, fever	CBC, X-ray chest, abdomen and CT-scan abdomen
Mesenteric Ischaemia	Elderly, RF: atherosclerosis, CHF, MI, valvular diseases	Diffuse abdominal pain, vomiting, diarrhea	CBC, S. lactate, CT angiography
Diverticulitis	Age >60	Left lower quadrant pain, fever, change in bowel habits	CBC, stool for occult blood, CT abdomen
Appendicitis	>5 years to young adulthood	Periumbilical pain migrates to RLQ, nausea, vomiting	Ultrasound abdomen
Ureteric Colic	Age 30-40	Severe flank pain radiating to groin, nausea, hematuria	Urine examination, CBC, CT, ultrasound - KUB
Ruptured Abdominal Aortic Aneurysm	Age >50, RF: hypertension, smoking, DM	Sudden onset abdominal pain radiating to back, shock	Bedside ultrasonography, CT aortogram
Ruptured Ectopic Pregnancy	Female, RF: previous ectopic	Severe pain, spotting, amenorrhoea	UPT, S.HCG, CBC, Pelvic ultrasound
PID	Age 15-49, RF: multiple partners, previous PID	Lower abdominal pain, fever, vaginal discharge	CBC, vaginal swab, ultrasound
C. difficile Colitis	Elderly, RF: antibiotics (fluoroquinolones, cephalosporins)	Crampy abdominal pain, watery diarrhea, fever	CBC, C.difficile toxin assay
***C. difficile* Colitis**	Elderly, RF: antibiotics (fluoroquinolones, penicillin)	Crampy abdominal pain, watery diarrhea, fever	CBC, stool culture, CT scan

Abbreviations: RF: Risk Factor, GI: Gastrointestinal, CBC: Complete Blood Count, S: Serum, CT: Computed Tomography, UPT: Urine Pregnancy Test, S.HCG: Serum Human Chorionic Gonadotropin, PID: Pelvic Inflammatory Disease, *H. pylori*: Helicobacter pylori.

Management[1]

The management of abdominal pain is dependent on its underlying cause. Oral analgesics, muscle relaxants, and antispasmodics are effective in visceral pain. Proton pump inhibitors and antacids are effective in pain relief in peptic ulcers. Triple therapy is required for the eradication of H. pylori and plays a major role in healing peptic ulcers.

Antibiotics play a major role in the initial management of diverticulitis and appendicitis. Vancomycin with or without metronidazole is the preferred treatment for C. difficile colitis after discontinuation of the offending antibiotics.

The surgical intervention provides definite therapy for appendicitis, diverticulitis, ruptured ectopic pregnancy, and large ureteric calculi.

Role of Antispasmodics and NSAIDs in Abdominal Pain Management

Antispasmodics and NSAIDs are widely used in abdominal pain management.

- **Antispasmodics:** These agents, including drotaverine, hyoscine, and mebeverine, help relieve pain caused by smooth muscle spasms. Drotaverine, a selective phosphodiesterase-4 inhibitor, has been shown to be particularly effective in managing spasmodic abdominal pain due to its ability to relax smooth muscle without causing significant adverse effects, unlike the anticholinergic antispasmodics like hyoscine, dicyclomine and camylofin.
- **NSAIDs:** Commonly used for inflammatory abdominal pain, NSAIDs such as ibuprofen and diclofenac are effective but can lead to gastrointestinal side effects, including peptic ulcers and gastritis, particularly with long-term use.

Efficacy and Safety of Fixed-Dose Combination of Drotaverine Hydrochloride and Paracetamol in Acute Infectious Gastroenteritis[4]

Objective

To evaluate the efficacy and safety of a fixed-dose combination of drotaverine hydrochloride (80 mg) and paracetamol (500 mg) in relieving abdominal pain in acute infectious gastroenteritis.

Methods

- A randomized, double-blind controlled trial was conducted.
- **Participants:** Adults aged 18–59 years with acute infectious diarrhea (≥3 unformed, watery, or soft stools within the last 24 hours, with symptoms lasting no more than 72 hours) and moderate-to-severe abdominal pain.
- **Intervention:** Participants were randomly assigned to receive either a fixed-dose combination of oral drotaverine hydrochloride and paracetamol or oral paracetamol (500 mg) three times a day for 3 days.
- **Primary outcomes:** Mean pain intensity difference at 60 minutes and total pain relief at 2 hours (measured by Visual Analogue Scale and Verbal Rating Scale).
- **Secondary outcomes:** Onset of pain relief, decreased pain episodes, global improvement, and adverse effects.

Results

- 252 participants were enrolled (126 in each group), with 242 completing the study.
- Significant improvement in mean pain intensity difference at 60 minutes after administration in the drotaverine hydrochloride and paracetamol group.
- Total pain relief at 2 hours showed statistically significant improvement in the combination group using both VAS and Verbal Rating Scale.
- Faster onset of pain relief was observed in the drotaverine hydrochloride and paracetamol group compared to the paracetamol-only group.

Conclusion

The fixed-dose combination of drotaverine hydrochloride and paracetamol is both effective and safe in managing abdominal pain associated with acute infectious gastroenteritis.

A Study on the Effectiveness of Drotaverine and Paracetamol Combination for Pain Management in Acute Gastroenteritis[5]

Objective

To compare the efficacy and safety of drotaverine 80 mg combined with paracetamol 500 mg in treating patients with acute gastroenteritis.

Methods

A total of 180 patients (ages 17–60) of both genders diagnosed with acute infectious gastroenteritis and presenting with abdominal pain for at least 24 hours were included in the study. After obtaining informed written consent, demographic information such as age, gender, height, weight, and body mass index (BMI) were recorded.

Patients were randomly assigned to two groups:

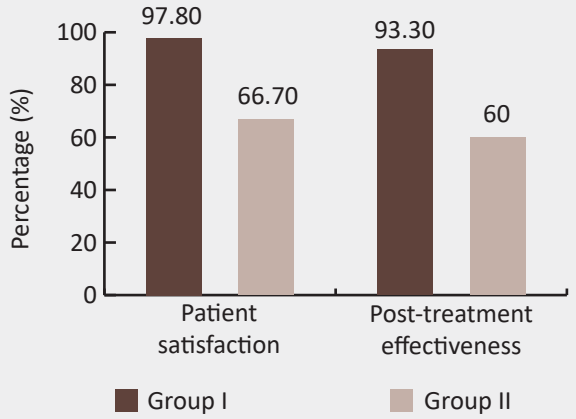
1. **Group I** received 80mg of drotaverine and 500mg paracetamol for two days.
2. **Group II** received 500mg of paracetamol for the same duration.

Pain severity was assessed using a Visual Analogue Scale (VAS) post-treatment to determine efficacy and safety.

Results

- Pain intensity significantly decreased after 8 hours in Group I (1.01±2.17) compared to Group II (4.09±11.34).
- Post-treatment effectiveness was higher in Group I (93.3%) than in Group II (60%).
- The most common side effects in both groups were nausea, vomiting, and dizziness, with a significantly lower frequency in Group I compared to Group II (p-value 0.005).
- Patient satisfaction was significantly higher in Group I (97.8%) compared to Group II (66.7%).

Figure 1: Comparison between both groups



Conclusion

The combination of 80 mg drotaverine with 500 mg paracetamol was more effective and safer than paracetamol alone in managing pain and improving the overall condition of patients with acute gastroenteritis.

Conclusion

Abdominal pain is a common presenting complaint with a wide range of potential causes, requiring an accurate diagnosis for effective management. Antispasmodics and NSAIDs play a significant role in the symptomatic treatment of abdominal pain, with drotaverine offering a well-tolerated and effective option for smooth muscle spasms. The fixed-dose combination of drotaverine and paracetamol has demonstrated superior efficacy and safety compared to paracetamol alone, particularly in cases of acute infectious gastroenteritis. Given the burden of abdominal pain-related conditions, further research into optimized treatment strategies, including combination therapies, is warranted to enhance patient outcomes and improve quality of life.

References

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