

Intraabdominal Infections in Older Adults



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KEYWORDS

- Acute abdomen • Atypical presentation • Intraabdominal infection
- Geriatric surgery • Frailty • Surgical outcomes

KEY POINTS

- Intraabdominal infections may be confined, localized, or diffuse.
- Compared with younger patients, elderly patients with intraabdominal infection tend to present in delayed or atypical fashion and have a narrow therapeutic window, both of which are associated with significantly increased morbidity and mortality.
- Treatment of intraabdominal infections is based on source control and judicious use of antibiotics. In elderly patients, this requires a balanced approach, taking into consideration the invasiveness and inherent risk of a procedure as well as its efficacy for producing the desired outcomes.
- Multimodal and aggressive preventative management of geriatric syndromes and collateral damage of diagnostic and therapeutic interventions decreases the risk of adverse outcomes in geriatric acute-surgery patients.

GENERAL PRINCIPLES

Intraabdominal infections are a leading cause of illness in the elderly population.¹ The pillars of treatment of any intraabdominal infection are antibiotics and source control (drainage or removal of the infecting agent when possible). To appropriately choose and direct therapy, it is helpful to classify intraabdominal infections according to their anatomic extent and recognize the patterns of presentation typical for each category. Perhaps most important, it is important to recognize the unique presentation of intraabdominal infections in the elderly patient and understand the outcomes of available management options in the geriatric population.

Anatomic Classification

Intraabdominal infections can be broadly classified as localized or diffuse. Localized infections may be solely confined to an organ or hollow viscus (eg, uncomplicated

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cholecystitis or *Clostridium difficile* colitis), producing localized symptoms. Additionally, these localized infections may create systemic effects (eg, severe cholangitis or fulminant *C difficile* colitis) or, with rupture or progression of local infection, may create a colocalized abscess. Diffuse intraabdominal infections, on the other hand, extend throughout the peritoneal cavity. Peritonitis may be primary, as in the case of spontaneous bacterial peritonitis; secondary, as in the case of perforated appendicitis or diverticulitis with diffuse peritoneal purulence or spillage of enteric contents; or tertiary, which represents incompletely eradicated or recurrent secondary peritonitis. Elderly patients are especially susceptible to tertiary peritonitis due to their decreased physiologic reserve and prevalence of malnutrition. Whereas primary and secondary peritonitis are predominantly associated with normal enteric flora (*Escherichia coli*, *Bacteroides fragilis*, and *Streptococcus* species), the pathogens responsible for tertiary peritonitis include frequently resistant nosocomial and opportunistic organisms such as *Pseudomonas aeruginosa*, multidrug-resistant *Klebsiella* and *Enterobacter*, and *Candida* species.²

Clinical Evaluation

The constellation of symptoms and signs that herald an intraabdominal infection in a young, healthy patient (ie, abdominal pain, guarding, rebound, fever, and leukocytosis, with or without hemodynamic changes such as tachycardia) are often absent or atypical in elderly patients. In patients with a decreased range of verbal expression due to dementia, aphasia, or other cognitive impairments, history may be difficult to obtain. Delirium and worsening cognitive function may be related to systemic effects of infection and/or decreased end-organ perfusion. Due to physiologic alterations associated with aging, abdominal pain may be vague and elusive, manifesting as social withdrawal, irritability, and disinterest in food or activity. The tachycardia common in children and young adults with intraabdominal infections may be absent in older patients, especially those on beta blockers. Because of changes in the immune system associated with advanced age and frailty, fever and leukocytosis may not develop. In fact, hypothermia and leukopenia are equally if not more ominous signs of intraabdominal infection in older patients (See [Norman DC: Clinical Features of Infection in Older Adults](#), in this issue.) Given the altered presentation, sepsis diagnosis can be late and the resultant hypotension can be sudden and profound. In addition to abdominal infections, due to the multiple chronic conditions encountered in this population, acute abdominal infections in the elderly person may be overshadowed or coexist with significant distracting diagnoses, including urinary tract infection and acute coronary syndrome.³ In summary, an inability to rely on obvious physiologic derangements is a hallmark in the geriatric population and is often associated with delays in diagnosis and treatment. Although this phenomenon is widely reported and well known to the geriatrician, the atypical presentation cannot be overemphasized and should be promulgated to surgeons, both established and in training, to reinforce this well-established fact.

The abdominal examination in the elderly patient with a suspected intraabdominal infection deserves particular mention. Because of connective tissue and immune changes associated with age, peritonitis in older patients who have insufficient skeletal muscle mass and inability to mount an appropriate inflammatory response does not produce the classic physical signs of involuntary guarding, rebound tenderness, and abdominal rigidity in response to peritoneal irritation characteristic of younger patients. Pain out of proportion to physical examination findings (ie, severe abdominal pain in the absence of objective physical examination signs of peritonitis) usually indicates intestinal ischemia associated with vascular inflow or outflow occlusion due to arterial thromboembolic events, mesenteric venous thrombosis, or mechanical factors

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