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ELDER CARE

A Resource for Interprofessional Providers

Presentation of Common Infections in Older Adults

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Infections are a major cause of morbidity and mortality in older adults despite advances in antibiotic therapy. They account for one-third of all deaths in people 65 years and older. As the population of older adults increases, clinicians are seeing increasing numbers of cases of infectious disease in older adults—particularly nosocomial and health-care associated infections.

Early detection of infection can be difficult in older adults due to the frequent absence of typical signs and symptoms. In particular, fever, the most recognized symptom of infection, may not be present. Instead, patients may present only with non-specific symptoms. Clinicians must balance the risks and benefits of initiating or withholding antibiotics in elders with non-specific or atypical signs and symptoms.

Fever

Fever is absent in 30-50% of frail older adults, even among those with serious infections. The cause of impaired febrile response is not well understood, but diverse mechanisms of thermoregulation are involved, including a reduced basal body temperature in many older adults such that even if temperature increases with infection, it may not reach standard criteria for diagnosis of fever.

As a result, fever in frail older adults, such as those in nursing homes, should be redefined. A temperature >2 F (1.1 C) over baseline (if a baseline is available) or, perhaps more practically, an oral temperature >99 F (37.2 C) or a rectal temperature >99.5 F (37.5 C) on repeated measures, should be considered an indication of possible infection. This definition of fever has good sensitivity (82.5%) and specificity (89.9%) for detecting infections in nursing-home residents.

Non-Specific Symptoms

A variety of non-specific changes in functional status may occur in older adults with infection. These changes may be the only indication that infection is present. For example,

patients may present with confusion, delirium, or falling, or they may have anorexia and decreased oral intake. They also may experience exacerbations of an underlying chronic illness, such as worsening of atrial fibrillation.

Being alert for such presentations is particularly important when caring for cognitively impaired older adults, as they may be unable to accurately communicate about their symptoms. When such non-specific symptoms are present, clinicians should consider infection as a cause and pursue assessments such as laboratory and radiologic evaluations unless advance directives indicate that such evaluation is not appropriate.

Several important infections that may have atypical symptoms in older adults are community acquired pneumonia, urinary tract infection, sepsis, *Clostridium difficile* infection, subacute infective endocarditis, and osteomyelitis.

Community Acquired Pneumonia

While the lack of typical symptoms is important in diagnosis of any infection in an older adult, it is particularly important when diagnosing community acquired pneumonia (CAP) because CAP is so common and serious in older adults. Pneumonia is the sixth leading cause of death in the United States and an estimated 90 percent of those deaths occur in people age 65 years and older. The annual incidence of CAP in non-institutionalized older adults is estimated to be 25-44 cases per 1000 persons, meaning that as many as one of every 23 will develop pneumonia each year.

Older adults with pneumonia may show fewer respiratory symptoms than younger adults. Instead, the non-specific presentations discussed earlier, like confusion or anorexia, will often be the only indication that infection is present. One study found that delirium or acute confusion will occur in nearly half (44.5%) of older adults with CAP.

TIPS ABOUT PRESENTATION OF INFECTIONS IN OLDER ADULTS

- Fever is frequently absent in older adults with infection, particularly in frail older adults. The absence of fever, therefore, does not exclude infection.
- Many common infections do not present with classic symptoms in older adults. For example, patients with pneumonia may not have respiratory symptoms, and patients with urinary tract infections may not have dysuria.
- Instead of classic symptoms of infection, older adults with infections may present with confusion, delirium, anorexia, falls, or a general decline in functional status.

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Urinary Tract Infections

There are a number of issues in older adults that make diagnosis of urinary tract infections (UTI) more challenging than in younger individuals. They include different presentation of acute UTI, the need to distinguish asymptomatic bacteriuria (ASB) from acute UTI, and the non-specific nature of pyuria.

Acute UTI While acute UTI in young adults typically presents with burning and pain upon urination, older adults don't always have those symptoms. Instead, they may present with new onset urinary incontinence, altered mental status, unexplained behavior changes, decreased appetite, unexplained weight loss, immobility, and/or falls. In regard to incontinence, some patients have pre-existing incontinence, which is a risk factor for developing acute UTI.

Chronic bacterial prostatitis in men often presents as what appears to be recurrent UTIs that respond poorly to antibiotic treatment. Prostatitis should always be in the differential diagnosis when an older man presents with UTI.

Asymptomatic Bacteriuria is highly prevalent among older adults. It is often seen in individuals who have indwelling bladder catheters, severe disability, or chronic comorbidities, but it is also seen in otherwise healthy individuals. ASB is considered benign and not indicative of infection. It does not, therefore, require antibiotic therapy. In fact, treating ASB is considered inappropriate as it increases the risk of antibiotic side effects and drug-resistant bacteria without improving any patient outcomes.

Pyuria is an increased number of white blood cells in the urine. While usually seen in acute UTI, pyuria is a non-specific finding. It also occurs as part of the host response to systemic infection in other parts of the body. It should not be considered diagnostic of UTI unless bacteriuria is also present.

Sepsis

The risk of sepsis increases with aging due to impaired immunity, poor nutrition, exposure to invasive procedures, and placement in long-term care facilities. Sepsis can present with many of the previously-mentioned non-specific symptoms. Patients with sepsis may also demonstrate hypothermia rather than fever.

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Clostridium Difficile Infection

C difficile is another important infection in older adults. Patients of advanced age with antibiotic exposure, recent gastrointestinal surgery, residence in a long-term care facility, or with serious underlying illnesses are at increased risk of acquiring this bacterial infection.

The presentation of *C difficile* infection in older adults can vary from just a few unformed stools per day to severe bloody diarrhea, crampy abdominal pain, fever, abdominal distention, and an increased white blood cell count. Pseudomembranous colitis is another common presentation in older adults, with severe complications of dehydration, hypoalbuminemia, and electrolyte abnormalities. Toxic megacolon with bowel perforation, sepsis, and death may occur.

Subacute Infective Endocarditis

Subacute infectious endocarditis (IE) has an increased incidence in older adults because of underlying cardiac valve disease, increasing use of prosthetic cardiac valves, longer life span in patients with rheumatic disorders that affect the heart valves, and exposure to procedures. It is more common in men than women.

The presentation of IE in older adults is often non-specific, with symptoms like lethargy, fatigue, anorexia and weight loss, all of which may be incorrectly attributed to other causes. Even heart murmurs, a classic sign of IE, may be attributed simply to underlying valve disorders that are common in older adults, leading to a missed diagnosis of IE.

Cellulitis and Chronic Osteomyelitis

Cellulitis commonly presents as unilateral lower extremity erythema, edema, and warmth. Findings may be subtle in older adults, and deep venous thrombosis (DVT) should also be considered. Bilateral involvement may indicate stasis dermatitis. Chronic osteomyelitis (OM) can underlie an area of cellulitis or non-healing cutaneous ulcers due to arterial and venous insufficiency and diabetes. Signs and symptoms helpful to identify early OM include tenderness over an infected bone, redness and warmth of the skin, drainage of pus from an open wound near a bone or prosthesis, decreased ability to move and pain in an extremity, and persistent unhealed ulcers or wounds.

Interprofessional care improves the outcomes of older adults with complex health problems

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