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Case Report

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Neurological functional decline as an atypical presentation of multidrug-resistant *Morganella morganii* cystitis in a Nonagenarian

Abstract

Background: Urinary tract infections in the elderly frequently present with nonspecific symptoms such as delirium and may involve multidrug-resistant organisms.

Case presentation: We report a case of a 91-year-old male with chronic kidney disease and heart failure presenting with generalized weakness and delirium. Laboratory studies revealed leukocytosis, elevated inflammatory markers, and elevated serum creatinine. CT-scan showed no acute abnormalities and urinalysis showed positive nitrites and significant pyuria. Urine culture isolated *Morganella morganii*, susceptible only to trimethoprim–sulfamethoxazole. Targeted therapy led to complete clinical improvement. **Conclusions:** This case highlights the need for comprehensive geriatric assessment, as urinary tract infections in older adults may present atypically. A thorough clinical assessment enables clinicians to distinguish whether delirium is attributable to infection or stroke, thereby preventing unnecessary treatments and allowing for more appropriate patient management.

Keywords: *Morganella morganii*, uti, delirium, elderly, stroke

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Introduction

Urinary tract infections (UTI) are among the most prevalent bacterial infections in older adults. Due to age-related physiological changes and comorbidities, clinical manifestations may deviate significantly from typical urinary symptoms, frequently presenting instead with acute neuropsychiatric changes.[1,2] Multidrug-resistant organisms (MDR) are increasingly common in this population and clinicians should maintain high suspicion for UTI in any older patient presenting with sudden cognitive or behavioral changes.[3] We describe a case of MDR *Morganella morganii* UTI presenting has a delirium in a nonagenarian with chronic kidney disease.

Case presentation

A 91-year-old male with a history of chronic kidney disease and heart failure presented with a 5-day history of generalized weakness and delirium. On examination, he was confused, disoriented and demonstrated fluctuating behavioral states, characterized by episodes of agitation and aggressiveness alternating with periods of marked somnolence. Vital signs were stable with no fever. Neurological examination revealed mild dehydration and a global reduction in muscle strength (Grade IV/V Medical Research Council) with no neurological focal signs. Laboratory findings included anemia (Hb 8.8 g/dL), leukocytosis (30.8 ×10^3/µL), elevated C-reactive protein (97.45 mg/L), and serum creatinine of 1.77 mg/dL. CT scan and arterial blood gas analysis showed no acute abnormalities.

Urinalysis revealed nitrite positivity, marked leukocyturia, and bacteriuria. Hydration and empirical cefuroxime were initiated for presumed urinary tract infection. During hospitalization, urine culture isolated MDR *Morganella morganii* spp. *morganii*, susceptible to trimethoprim–sulfamethoxazole. Over 48 hours, the patient´s neuropsychiatric symptoms began to resolve, with complete recovery to baseline by day seven, the patient was discharged after 8 days without complications.

Discussion

Elderly patients often present with non-classic symptoms of infection due to immunosenescense and reduced inflammatory response[1] which may delay recognition of the infectious source. Urinary complaint and fever may be absent.[2,4] Several mechanisms explain the atypical presentations like a blunted systemic inflammation, baseline cognitive frailty, dehydration and polypharmacy amplify confusion and behavioral alterations and age-related neurological changes enhance susceptibility to inflammatory mediators.[1–3,5,6]

The distinction between delirium caused by UTI and stroke is crucial in clinical practice, particularly in older adults who may present with atypical manifestations. On one hand delirium due to UTI has an acute onset, usually over hours to days, fluctuating symptoms and may start insidiously, associated with dehydration, malaise, reduced intake or behavioral changes.[1,7,8] On the other hand, delirium due to a stroke has a sudden onset, within seconds to minutes, symptoms generally do not fluctuate, except in evolving ischemic stroke and has focal neurological deficit.[9–11]

Morganella morganii is an opportunistic Gram-negative bacillus implicated in UTIs, particularly among older adults and immunocompromised patients. Its capacity for multidrug resistance limits therapeutic options.[12] In terms of how often it occurs, *Morganella morganii* represents only a small proportion of urinary tract infections in older adults. Although it is less common than *E. coli*, it poses a greater likelihood of developing into bacteremia and sepsis in frail patients, which can in turn raise the risk of secondary neurological complications like delirium.[13–15]

This case illustrates the need for maintaining a broad differential diagnosis when evaluating nonspecific symptoms in geriatric patients, especially those with chronic kidney disease, where antimicrobial selection must consider nephrotoxicity. Prompt diagnostic testing, including urinalysis in the context of elevated inflammatory markers, was essential for identifying the underlying infection.

Conclusion

UTIs in elderly patients frequently present atypically, and MDR organisms such as *Morganella morganii* may further complicate management. Comprehensive geriatric assessment and targeted antimicrobial therapy are crucial to improving clinical outcomes in this vulnerable population. A thorough clinical assessment enables clinicians to distinguish whether delirium is attributable to infection or stroke, thereby preventing unnecessary treatments and allowing for more appropriate patient management.

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None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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