

CLINICAL VIGNETTE

Delirium in the Elderly

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Case Report

A 73-year-old female was brought in by ambulance with a chief complaint: "worrying about having heart or kidney failure." The patient stated she had not been able to sleep for several months secondary to these preoccupations. She also had multiple other subjective complaints including food getting stuck in throat for 2 days, claustrophobia, decreased appetite and decreased oral intake.

The remaining history was obtained from the patient's sister, who lived with the patient. Her sister stated that approximately 2 weeks prior, the patient developed a subjective high fever, headache, nausea, vomiting and abdominal pain. The patient's sister felt she was "burning up" and observed chills. The patient then saw her physician who prescribed ciprofloxacin. The patient then reportedly developed an unnamed "allergic reaction" and stopped taking the antibiotic. She was then given another unknown medication, which she also stopped due to another "allergic reaction." Approximately 1 week prior to presentation, the patient developed an abrupt change in mental status with perseverations about heart and kidney failure and breast and colon cancer. She was unable to sleep, did not eat and was generally very agitated. During the last week, the patient's sister twice observed a low-grade fever of 100°F.

In the emergency department, the patient denied headache, fever, chills, nausea, vomiting, vision changes, chest pain or shortness of breath. Past medical history included 2 ischemic strokes several years prior with no residual deficits, peptic ulcer disease, diverticulosis, benign tremor, gastroesophageal reflux disease, asthma, emphysema, tachyarrhythmia, macular degeneration, osteoarthritis, hypertension, rheumatoid arthritis, diabetes, gout and hyperlipidemia. She also has a chronic anxiety disorder, hypochondriasis, and depression. The patient's sister stated that the patient had an "agitative personality," and that this behavior has been progressing over the last year. At baseline, the patient was able to independently complete all of her

Activities of Daily Living and Instrumental Activities of Daily Living, and helped care for her sister, who has breast cancer. The patient formerly worked as a commercial artist. She previously smoked but did not drink alcohol. Her medications included belladonna, trazadone, carisoprodol, citalopram, diazepam, furosemide, lansoprazole, albuterol, acetylsalicylic acid, salmeterol, and benazepril. Her reported allergies included penicillin, sulfa, tetracycline, and ciprofloxacin.

The vital signs included temperature of 98.6°F, blood pressure ranging from 220 to 153 mm Hg systolic and 79 to 66 mm Hg diastolic, and heart rate ranging from 118 to 80 beats per minute. She was breathing comfortably with 98% oxygen saturation on room air. The patient was alert, awake and oriented to self and general place only. She was very anxious and verbose with tangential speech. The head, neck, lungs, heart, abdomen, skin and extremities were unremarkable. Her neurological examination showed a generalized resting tremor, but was otherwise non-focal, and she had no nuchal rigidity.

Laboratory studies in the emergency department showed a white blood cell count of 8.9 with 77% neutrophils, 13% lymphocytes and 8% monocytes. Electrolyte panel revealed sodium of 127, potassium of 3.6, chloride of 92, bicarbonate of 26, urea nitrogen 7 and creatinine of 0.7, and calcium of 8.8. Urinalysis was notable for 2+ ketones, trace blood, 6 red blood cells and 4 white blood cells. Urine toxicity screen was positive for barbiturates. Electrocardiogram was unremarkable. A non-contrast head computed tomographic scan was negative for infarct, bleed, mass effect or hydrocephalus. After evaluation in the emergency department, the patient was admitted to the U.C.L.A. Neuropsychiatric Hospital with a presumptive diagnosis of altered mental status secondary to psychiatric disturbance.

Geriatric medicine was consulted. This patient had many reasons for her delirium, including her multiple medications and recent illness. However, her history of fever, headache and vomiting raised concerns for an occult infectious process. Laboratory tests supporting infection were limited: only a left shift in her white blood cell differential. Because leukocytosis and fever can frequently be absent in the older infected patient, a lumbar puncture was performed. Cerebrospinal fluid (CSF) cell count showed 580

white blood cells and 11 red blood cells with 98% lymphocytes. Glucose was 75 and protein was 45. Gram stain showed many white blood cells. Final CSF bacterial and fungal cultures were negative, and the patient was diagnosed with viral meningoencephalitis. Final CSF serologies were negative for herpes simplex virus, West Nile virus, or cytomegalovirus.

Discussion

This patient presented with delirium, defined in the Diagnostic and Statistical Manual of Mental Disorders as "a disturbance of consciousness that is accompanied by a change in cognition that cannot be better accounted for by a preexisting or evolving dementia." This disturbance develops over hours or days, and fluctuates during the course of the day. There also must be evidence from history, physical examination or laboratory testing that the delirium is directly a physiologic consequence of a general medical condition, substance intoxication or withdrawal, use of a medication, toxin exposure or a combination of these factors.¹ There is a broad spectrum of consciousness in the presentation of delirium - from hypoactive to hyperactive states.²

The differential diagnoses in delirium in the elderly patient are very broad, and encompass many systems. Anticholinergics and benzodiazepines are some of the most common medications in the older population. The most common infectious causes include respiratory, urine and skin infections. Metabolic disorders include dehydration, electrolyte imbalances, hypoglycemia and hypoxia. Cardiovascular causes include heart failure and myocardial infarction. Neurologic etiologies include central nervous system infections (such as meningitis or encephalitis), stroke, seizures and subdural hematomas. Finally, miscellaneous etiologies common in the older population include urinary retention and fecal impaction.³

The goal in the work-up of delirium is to identify the underlying reversible etiology. This begins with a careful history and physical examination, which often requires corroboration with family members, friends or caregivers, given that patients are often too altered to give a reliable history. A review of current medications, paying special attention to newly added ones, is also critical. Infection and other major medical causes must also be ruled out. Laboratory studies should include a complete blood cell count with differential,

comprehensive metabolic panel, urinalysis, chest x-ray and electrocardiogram.

The question of whether to perform lumbar puncture in the delirious patient is not clearly answered. If there is any suspicion of infection and no other source is identified, then a lumbar puncture may be warranted. Most experts recommend lumbar puncture in febrile patients in whom meningitis is suspected. These symptoms include progressive lethargy, confusion, stupor and coma.⁴ A recent retrospective analysis of 232 hospitalized patients with fever and altered mental status demonstrated that lumbar punctures for suspected nosocomial meningitis in non-surgical patients have a low yield.⁵ Though delirium is not typical for meningitis, it may be a sign of central nervous system infection, particularly meningoencephalitis. Given that infected elderly patients may not present typically (e.g. not mounting a febrile response), lumbar puncture has been recommended even in afebrile patients when no other source of delirium can be found.⁶ Again, clinical yield may be low.

Brain imaging is of unclear value in the work-up of delirium. It is best used in a patient where there is suspicion of a primary neurologic event, or to rule out a primary neurologic event when history is unobtainable (e.g. a patient with advanced dementia). Therefore, brain imaging may be most helpful as a diagnostic tool in patients with new focal neurologic signs, head trauma, or those without another identified etiology.⁷ Finally, electroencephalogram has some value as well in diagnosing occult seizures.

The treatment of delirium is to treat the underlying physiologic disturbance. Furthermore, the American Geriatrics Society also recommends the following general supportive measures: environmental modifications should include quiet, well-lit surroundings, familiar faces for reassurance, objects that provide reorientation and sitters if necessary. Patients should have stimulating activities such as cognitive activities and range of motion exercises during the daytime. Sensory deficits should be corrected as much as possible. Measures should be taken to promote normal sleep, and close attention should be paid to preventing dehydration. Physical restraints should be used only as a last resort to ensure patient safety.³

Finally, pharmacologic management may be neces-

sary in acutely agitated patients. The American Geriatrics Society recommends using a high-potency antipsychotic such as haloperidol 0.5 to 2 mg orally or intramuscularly, which is twice as potent as oral dosage. Haloperidol may also be given as slow intravenous push. Patients should be reevaluated frequently and clinicians should watch for extrapyramidal side effects.

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