

#### 4. IATROGENIC

New-onset psychiatric symptoms in geriatric patients can frequently be attributed to the addition, discontinuation, or interaction of medications.<sup>8</sup> Because individuals with dementia have compromised central nervous systems, they are particularly vulnerable to medication side effects and adverse interactions. The clinician in the ED should take a thorough inventory of all medications the patient is currently taking, those which could have been added (eg, anticholinergics, steroids), as well as those which have been recently discontinued (eg, benzodiazepines).

#### 5. ILLNESS

Exacerbations of chronic medical illnesses such as diabetes, chronic obstructive pulmonary disease, and renal disease can manifest initially with cognitive or behavioral changes in those with comorbid dementia.<sup>9</sup> Careful attention to signs of a progressive or sudden worsening of these medical conditions could lead the ED clinician to a better understanding of the changes in the patient's mental status.

#### 6. IMPACTION

Fecal impaction is a common, and oftentimes overlooked, condition in geriatric patients, which can profoundly affect the person's behavior and clarity of thinking.<sup>10</sup> This population is particularly susceptible to fecal impaction as a result of the contributing effects of immobility, dehydration, and medication side effects. In a demented patient, fecal impaction can lead to great discomfort, high levels of agitation, and a state of worsening confusion.

#### 7. INCONSISTENCY

Individuals with dementia are highly sensitive to changes in their environment and daily routine.<sup>3</sup> New caregivers, altered schedules for bathing and eating, different sleep patterns, or transfers to entirely new facilities can increase irritability, confusion, and acting-out behaviors. A careful social history taken from a reliable collateral source will oftentimes point to an environmental or social inconsistency as being the primary cause of recent changes in behavior or thinking.

Almost any psychiatric syndrome can be mimicked by a medical, neurologic, or environmental change in those who experience moderate to severe dementia.<sup>2</sup> ED physicians, in collaboration with the consulting psychiatrist, should rule out these most common causes before attributing new-onset mental status or behavioral changes solely to a mood or psychotic disorder.

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#### References

1. Tueth MJ, Zuberi P: Life-threatening psychiatric emergencies in the elderly: overview. *J Geriatr Psychiatry Neurology* 1999;12:60-66
2. Waxman HM, Dubin W, Klein M, et al: Geriatric psychiatry in the emergency department, II: evaluation and treatment of geriatric and nongeriatric admissions. *J Am Geriatr Soc* 1984;32:343-349
3. Kaplan BJ, Sadock VA (eds): *Comprehensive Textbook of Psychiatry*, 7th ed. Philadelphia: Lippincott Williams&Wilkins, 2000: 2980-3184
4. Nicolle LE: Resistant pathogens in urinary tract infections. *J Am Geriatr Soc* 2002;50:S230-S235 (suppl 7)
5. Nicholson S, High K, Gothelf S, et al: Gatifloxacin in community-based treatment of acute respiratory tract infections in the elderly. *Diagn Microbiol Infect Dis* 2002;44:109-116
6. Akhtar AJ, Alamy ME, Yoshikawa TT: Extrahepatic conditions and hepatic encephalopathy in elderly patients. *Am J Med Sci* 2002;324:1-4
7. Speechley M, Tinetti M: Falls and injuries in frail and vigorous community elderly persons. *J Am Geriatr Soc* 1991;39:46-52

8. Lebowitz BD, Pearson JL, Cohen GD: *Clinical Geriatric Psychopharmacology*, Baltimore, MD, Williams and Wilkins, 1998

9. Ormel J, Kempen G, Penninx R, et al: Chronic medical conditions and mental health in older people: disability and psychosocial resources mediate specific mental health effects. *Psychol Med* 1997;27:1065-1077

10. Annels M, Koch T: Fecal impaction: older people's experiences and nursing practice. *British Journal of Community Nursing* 2002;7:118-126

#### PSOAS HYPERTROPHY MIMICKING RETROPERITONEAL TUMOR IN A CHILD WITH ABDOMINAL PAIN

*To the Editor:*—Diagnosing a retroperitoneal lesion, especially psoas compartment disease, is sometimes difficult when using only conventional radiographs, and a comprehensive list of pathogenic entities must be considered. Although the advent of computed tomography (CT) has markedly improved our understanding of disease patterns and has proved useful in assessing both the location and extent of retroperitoneal injuries, it is expensive and not cost-beneficial in some circumstances. A unique kidney, ureter, and bladder (KUB) image of a pediatric patient, who presented at our pediatric ED with an acute abdomen, resulted in an initially misleading diagnosis

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FIGURE 1. Emergency room radiogram of the kidney, ureter, and bladder (KUB) showing suspected retroperitoneal mass with remarkably bulging psoas margin (arrowhead).

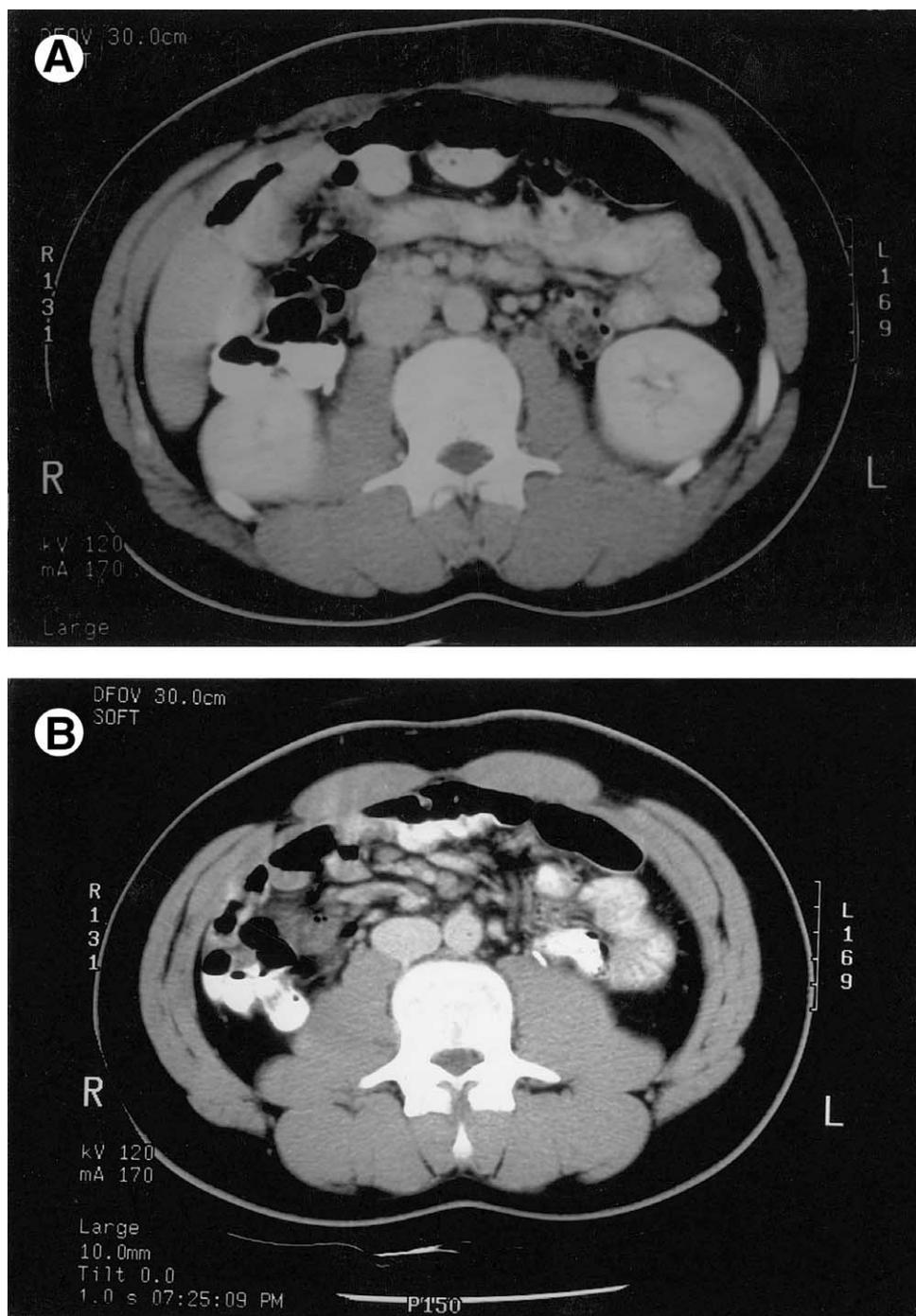


FIGURE 2. (A) Intravenous contrast helical computed tomography scan at the upper lumbar level reveals normal thickness of psoas muscle. (B) The same computed tomography scan over the L<sub>3</sub>/L<sub>4</sub> level demonstrates bulky hypertrophied psoas muscles without intra- or retroperitoneal lesions.

that required confirmation from an abdominal CT scan. To the best of our knowledge, this is the first pediatric case discussed in the field of EM and radiology literature.

A 15-year-old boy presented at our pediatric ED with a 5-day history of abdominal pain, nausea, and mild loose stool passage. The characteristic of his abdominal pain was dull, episodic cramps that subsided spontaneously. There was no associated vomiting, fever, dysuria, or loss of weight. Previous trauma insult or recent surgical interventions were denied. His medical history was otherwise unremarkable, except for thalassemia minor. On physical examination, this boy was well-developed and well-nourished, and, in general, healthy. There was mild tenderness without significant rebound pain over the periumbilical area. The bowel sounds were normal and the

abdomen was without a palpable mass. The ED KUB had been arranged to rule out functional gastrointestinal problems such as stool impaction. However, it showed a suspected retroperitoneal mass incidentally with a remarkably bulging psoas margin (Fig 1). Abdominal sonography was performed in the ED, but no visible lesion was found in the abdominal cavity. Advanced studies, including a CT scan of the abdomen, were done. On the CT scan, there was no space-occupying lesion or any other pathologic mass found in the retroperitoneal area, but the psoas muscles were markedly hypertrophied (Fig 2) and symmetrically corresponded to the pseudotumor seen on the KUB. Neither pelvicalyceal system was dilated and no visible lesion was found in the peritoneal cavity. The laboratory data showed no evidence of leukocytosis or anemia except for a microcytic change

(mean corpuscular volume:  $67.3 \mu\text{m}^3$ ). Renal and liver functions were within the normal range and the inflammatory index level (C-reactive protein) was not elevated. The admission course was uneventful and the abdominal pain resolved after conservative treatment.

The differential diagnosis between life-threatening diseases and benign lesions in the ED remains a challenge to both radiologists and EPs. The retroperitoneum is relatively inaccessible to conventional roentgenologic imaging techniques. Many radiographic signs of retroperitoneal lesions depend on indirect evidence such as displacement of the ureter or alternation of the psoas margin.<sup>1</sup> The appearance of the psoas margin varies according to local pathologic conditions such as hematoma, abscess, and retroperitoneal tumors.<sup>2,3</sup> However, obliteration of the psoas shadow is not a reliable indicator of a pathogenic process; some benign variants could mimic acute abdominal conditions.<sup>4</sup> This patient's tumor-like lesion was brought to our attention only because of a delineated shadow on his KUB radiograph. The massive psoas muscles were not large enough to indent the patient's bowel or be accompanied by acute urinary retention,<sup>5</sup> and some of the patient's gastrointestinal problems could have been coincidental. The patient's history was remarkable only for lifting dumbbells in a body-building program designed to build up his back and trunk muscles immediately before hospitalization.

The psoas muscle is a major flexor of the hip. It stabilizes the lumbar spine while standing and walking, and it contributes to compressive and shear forces at the lumbar intervertebral discs during specific exercises. It reaches its maximum cross-sectional areas (CSAs) at the L<sub>4</sub>/L<sub>5</sub> level. This is why patients with bowel displacement or hydronephrosis by a hypertrophic psoas is always at this level. Our patient demonstrates a similar clinical presentation, except for symmetric CSAs over the L<sub>3</sub>/L<sub>4</sub> level, and is the youngest subject reported in the literature.

Hypertrophy of the psoas muscles is a benign anatomic variant that could be recognized easily on a KUB image and might need an abdominal CT to confirm the normal entity. A CT scan is an effective screening modality because it provides not only an etiologic explanation of retroperitoneal lesion, but also because it directs appropriate clinical management. However, the cost and effectiveness of a CT scan for diagnosing an acute abdomen in a pediatric ED seems to be another challenging issue.<sup>6</sup> More evidence is needed to establish a clinical algorithm that allows ED physicians to avoid a costly and time-consuming workup for a benign condition. With physical fitness becoming a national trend, it is important to recognize the more common entity we described. A detailed history and a careful examination continue to play important roles in diagnosing this normal variant.

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## References

1. Ralls PW, Boswell W, Henderson R, et al: CT of inflammatory disease of the psoas muscle. *Am J Radiol* 1980;31:767-770
2. Feldberg MAM, Koehler PR, Van Waes PFGM: Psoas compartment disease studied by computed tomography. *Radiology* 1983;148:505-512
3. Stephens DH, Sheedy PF, Robert RH, et al: Diagnosis and evaluation of retroperitoneal tumors by computed tomography. *Am J Radiol* 1977;129:395-402
4. Zeiss J, Smith RR, Taha AM: Iliopsoas hypertrophy mimicking acute abdomen in a bodybuilder. *Gastrointest Radiol* 1987;12:340-342
5. Frank RG: Retroperitoneal mass and hydronephrosis. *Urology* 2000;55:141-142
6. Garcia Pena BM, Taylor GA, Fishman SJ, et al: Costs and effectiveness of ultrasonography and limited computed tomography for diagnosing appendicitis in children. *Pediatrics* 2000;106:672-676

## GASTRIC DECONTAMINATION, ENHANCED ELIMINATION, AND TOXICOKINETICS IN A SUSTAINED-RELEASE BUPROPION OVERDOSE

*To the Editor:*—We appreciated the letter describing the overdose of sustained-release bupropion by White et al.<sup>1</sup> This is an uncommonly seen overdose and all experience with this ingestion is valuable. We want to comment on the interpretation of treatment, recommendations, and laboratory analysis.

Multiple dosing of activated charcoal (MDAC) has been described to be an effective treatment for five medications (theophylline, phenobarbital, carbamazepine, dapsone, and quinine). This is according to the consensus statement by the American Academy of Clinical Toxicologists and European Association of Association of Poison Centers.<sup>2</sup> This is typically recommended to be done as an initial dose of activated charcoal (AC) at 1 g/kg with a cathartic (eg, sorbitol), followed by ½ g AC without a cathartic approximately every 4 hours. Most authors agree that only one dose of cathartic should be given within a 24-hour period. In the case report by White, four additional doses of 30 g of AC with sorbitol were given at 6-hour intervals. The risk of multiple dosing of a cathartic is developing electrolyte abnormalities (hyponatremia, hypermagnesemia, dehydration) and potentially causing seizures.<sup>3,4</sup> According to the position statement of the American Academy of Clinical Toxicologists and European Association of Association of Poison Centers, the addition of a cathartic to AC has not been demonstrated to improve outcome in a poisoned patient.<sup>5</sup>

There is a problem with the use of the phrase “whole bowel irrigation” (WBI) by the authors. This procedure is generally carried out with the use of a polyethylene glycol electrolyte lavage solution (PEG-ELS). The goal is to speed the transit of a toxin through the gut before it is absorbed. It is typically administered at a rate of 1 to 2 L per hour in an adult. MDAC with sorbitol should not be confused with WBI with PEG-ELS. The latter treatment has been demonstrated to be safe and does not cause electrolyte imbalance as could the multiple dosing of sorbitol. WBI has been shown to decrease the area under the curve in volunteers ingesting a delayed release preparation of lithium.<sup>6</sup> It has also been speculated to be effective in the setting of sustained-release preparation overdose.<sup>7</sup> Another author has also suggested its use in sustained-release bupropion overdose, but its efficacy remains unproven.<sup>8</sup>

The current case also does not prove efficacy. In this case, two levels were obtained. The 3-hour post-ingestion level was 2200 ng/mL and a level obtained at 24 hours postingestion was 57 ng/mL. The authors speculate that the difference between plasma levels seems greater than one would expect based on a normal