MISSOURI HOSPITALIST SOCIETY

Publisher:

Division of General IM

University of Missouri

Columbia, Missouri

Editor:

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MISSOURI HOSPITALIST

Issue 37 March-April, 2011

Hospitalist Update

Is there a role for Hospitalists in the management of Osteoporosis?

Kyle Moylan MD, FACP

Hospitalists may not consider osteoporosis to be an entity that they are responsible for diagnosing or treating, since it has largely been relegated to the outpatient physicians; there may be multiple reasons for this point of view. First, patients are never admitted to the hospital with the primary diagnosis of "osteoporosis;" it is more likely for them to be admitted due to a consequence of their osteoporosis, such as an osteoporotic fracture, for which the immediate focus is surgical therapy and pain control. Alternatively, a patient may be noted to have osteoporosis during their hospital stay for a completely unrelated problem and the diagnostic and therapeutic focus is on the acute issue. Secondly, the diagnosis of osteoporosis has, perhaps inappropriately, been largely tied to the results of bone mineral density (BMD) testing, a study that cannot typically be obtained in the inpatient setting. This often leads to the conclusion that, even in the face of an apparent osteoporotic fracture, treatment must await the outpatient confirmation of osteoporosis via BMD testing.

Despite this background, it is clear that our aging patient population will force us to confront an epidemic of osteoporosis and its consequences. The National Osteoporosis Foundation estimates that there are currently about 12 million people with osteoporosis and another 40 million with low bone mass; these numbers are expected to rise to 14 and 47 million by 2020 [1]. It has also been estimated that the number of hip fractures will double or triple by 2040 [2], a problem that will have definite implications for hospitalists. Unfortunately, it is clear that our healthcare system does a poor job of recognizing and treating osteoporosis; indeed this condition is often not diagnosed or treated, even in patients who have suffered a fracture. In one study of patients with a prior hip fracture, only 1 in 8 patients underwent BMD testing, fewer than 1/4 were given calcium and vitamin D supplements and less than 1 in 10 were treated with antiresorptive medications [3].

While hospitalists may recognize that BMD values help to establish the diagnosis of osteoporosis, the NIH Consensus Conference definition of osteoporosis does not refer to BMD results: "osteoporosis is a skeletal disorder characterized by compromised (cont)

(continued) bone strength, predisposing to an increased risk of fracture [4]."

The implication for hospitalists, who play an important role in the management of hip fracture patients, is that patients with osteoporotic fractures can be diagnosed and treated. If such patients are discharged without arrangements for further assessing and treating the osteoporosis, an important opportunity will have been lost. As hospitalists, we often see patients with symptomatic or asymptomatic vertebral fractures, identified on CXR or other studies; these patients are at significant risk for subsequent fractures and would benefit from therapy to increase their bone strength.

The HORIZON trial showed that patients with hip fractures who are treated with zoledronic acid infusion had markedly better outcomes at one year compared to patients who received placebo [5]; the patients benefitted from both a reduction in recurrent fractures and a reduced mortality from any cause. Our current system for reimbursement of hospital care has probably discouraged the adoption of this strategy: the single yearly infusion of zoledronic acid is about equivalent to the cost of a year of treatment with oral bisphosphonates ($1262 for a single infusion of zoledronic acid vs. $1093 for one year of weekly alendronate) [6]. If administered in the hospital setting, the infusion of this expensive medication would add considerable cost to the hospital care for patients under a fixed payment based system. Even in the HORIZON trial, the infusion of zoledronic acid was administered shortly after admission but within 90 days of the fracture; adopting this approach would take considerable coordination of care between the hospitalist and the post-discharge provider (often a rehabilitation or nursing home physician in the case of hip fractures).

What can hospitalist do? Consider the following:

1. We have to accept responsibility for the identification and treatment of osteoporosis. An analogous development has been the widespread vaccination of hospitalized patients against influenza and pneumococcus, a practice once relegated to outpatient settings. Another analogy to consider: viewing a fracture as a sentinel event in the natural history of osteoporosis just as we view a myocardial infarction as a sentinel event for patients with cardiovascular disease; an MI prompts us to prescribe aspirin, statins and other medications to diminish risk of future events and the occurrence of an osteoporotic fracture should trigger a similar response.
2. We should be willing to make the diagnosis of osteoporosis in our patients, even when BMD results are not yet available. This may be suspected due to acute osteoporotic fractures or the discovery of asymptomatic vertebral fractures on radiographic imaging; in such cases, we should facilitate arrangements for their outpatient BMD testing.
3. When we suspect undiagnosed or untreated osteoporosis in a patient, we should initiate laboratory evaluation for osteoporosis, including serum calcium, phosphorus, vitamin D and parathyroid hormone levels; other testing, such as serum protein electrophoresis and TSH, might also be performed if clinically indicated.
4. When hospitalists recognize untreated osteoporosis, treatment should be initiated. This includes adequate supplementation with calcium and vitamin D in addition to pharmacologic therapy with bisphosphonates; an appropriate starting point is to initiate this strategy for geriatric patients admitted with apparent osteoporotic fractures.

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CASE OF THE MONTH Naveen Rajpurohit, MD & Anthony Zeimet, DO

MULTIPLE SPINAL EPIDURAL ABSCESSES

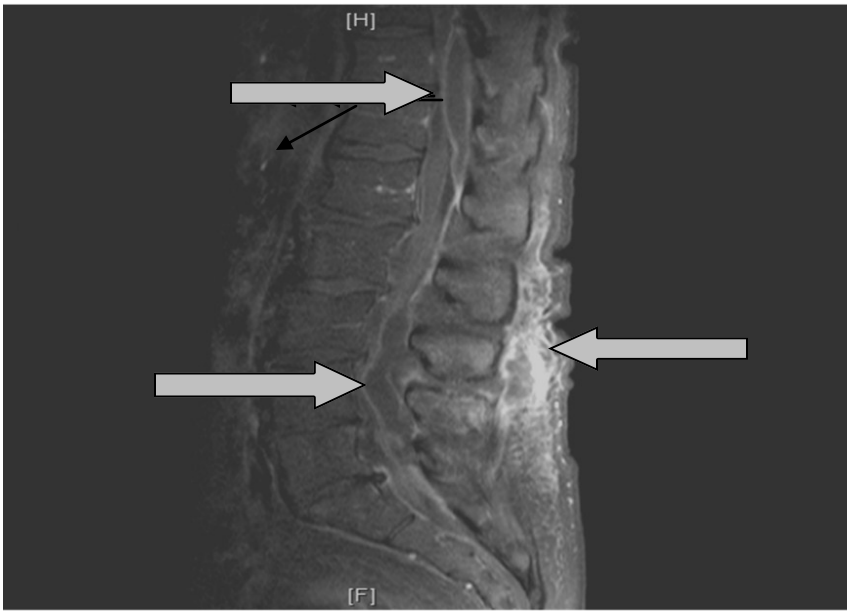
A 62 year old white male with a past history of Hepatitis C presented to the ER with complaints of fever, back pain and weakness of his lower extremities. The patient had been having intermittent low grade fevers for about a month, with associated chills and night sweats. He took a course of Amoxicillin with no improvement. Over the past 8 days, his lower back pain, described as sharp without radiation, was increasing in severity and had become 10/10 with movement. He also reported a sensation of weakness in his lower extremities and was having difficulty walking or standing; at presentation, he was unable to stand without support. He admitted to alcohol and IV drug abuse; home medications included ropinirole, fluoxetine, olanzapine and fluticasone nasal spray.

Initial vitals revealed T 36C, P 92, R 16 and BP 136/74. Physical exam demonstrated an acutely distressed, dishevelled male who was irritable and uncooperative. He had a port-a-cath on his left chest, placed 8 months ago for treatment of melanoma; no erythema or tenderness was noted at the catheter site. Cardiac exam revealed a regular rhythm without murmurs. A tender, red, non-fluctuant swelling of his left hand, on the thenar aspect, restricted finger movement. Swelling was also noted over his lumbar spine (10cm transverse by 3 cm vertical); this was non-fluctuant and not erythematous. The patient was unable to walk and could not stand without support due to weakness in his legs; motor strength was 3/5 in both lower extremities. Cranial nerves 2-12 were intact. DTRs were hyperreflexic in the lower extremities but his sensory exam was normal. Anal sphincter tone was also normal.

Admission labs revealed WBC 19.2 with 80.2% granulocytes, Hgb 13.8, ESR 113, CRP 32.7, Na 123, K 3.4, serum glucose 196, creatinine 1.75, albumin 2.8 and his hepatic transaminases were normal; his urine toxicology screen was positive for amphetamines and barbiturates. Plain films of the LS spine showed 6mm of retrolisthesis of L3 on L4, multilevel degenerative disc disease and anterior margin osteophytosis with disk space loss, which was most prominent at L4 and L5. Films of the left hand were remarkable for severe degenerative changes and radiographs and a CT of the thoracic and lumbar spine revealed only degenerative disc disease. The patient was pan-cultured and started on IV vancomycin and meropenem.

HOSPITAL COURSE:

An MRI of the spine revealed extensive epidural abscess formation throughout the thoracic and lumbar spine (T10-L5), multiple abscesses within the posterior superficial soft tissues and musculature and evidence of osteomyelitis.



The patient underwent drainage and debridement of the epidural abscesses with a laminectomy of L1-L5. Blood cultures and wound cultures from the surgical debridement rapidly turned positive for MRSA. A TEE was negative for endocarditis but a bone scan revealed osteomyelitis of the left wrist and right ankle. He was eventually discharged home to complete a 6 week course of IV Vancomycin and, at followup, the patient was placed on TMP-SMX for another month due to concerns of residual infection in the hand and ankle which had not been debrided. His final diagnosis was multiple spinal epidural abscesses with associated osteomyelitis, secondary to MRSA.

DISCUSSION:

The incidence of epidural abscesses has doubled over the past two decades due to an aging population, the use of spinal instrumentation and vascular assist devices and the ongoing problem of injection drug abuse [1-3]. Most patients have one or more predisposing conditions, such as underlying disease (diabetes mellitus, drug abuse, HIV), a spine abnormality or a local or systemic source of infection (skin and soft tissue infections, UTI, osteomyelitis, etc.) [4-13]. Most predisposing conditions allow for invasion by skin flora and Staphylococcus aureus accounts for about 2/3 of cases. Less common pathogens include coagulase negative staph, Escherichia coli and Pseudomonas aeruginosa (especially in injection drug users) [1]. The classic triad of fever, back pain and neurologic deficit is present in only a minority of cases [15]. Abscesses are more likely to develop in larger epidural spaces that contain infection-prone fat; these are primarily in the posterior area of the spinal column [2]. Bacteremia, arising from spinal epidural abscesses, is detected in about 60% of patients [16]. Lumbar puncture should not be performed routinely; MRI is the diagnostic procedure of choice since it is less invasive and (continued)

(continued) delineates both the longitudinal and paraspinal extension of the abscess [17].

The majority of studies provide support for surgical drainage and systemic antibiotics as the treatment of choice [1,2,16,19]; decompressive laminectomy and debridement of infected tissue should be performed as soon as possible. Empiric antibiotic therapy should provide coverage against staphylococci (usually with Vancomycin) and gram-negative bacilli (broad spectrum beta-lactam or a carbapenem); continued therapy should be guided by culture results and coverage should be narrowed accordingly. Since vertebral osteomyelitis exists in most patients with spinal epidural abscess, IV antibiotic coverage is usually continued for 6 weeks.

The death rate for spinal epidural abscess is about 5%, usually resulting from uncontrolled sepsis, evolution of meningitis or other underlying illnesses. The final neurologic outcome and functional capacity of patients should be assessed at least 1 year after treatment since patients may continue to regain neurologic function and benefit from rehabilitation.

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FROM THE JOURNALS

ROBERT LANCEY MD, FACP

FOCUS ON VTE:

The CLOTS (Clots in Legs Or sTockings after Stroke) Trial Collaboration. Thigh-Length Versus Below-Knee Stockings for Deep Venous Thrombosis Prophylaxis after Stroke: A Randomized Trial.

Ann Internal Med, November 2, 2010; 153:553-562

Patients with stroke are at increased risk of VTE and, while graduated compression stockings are commonly used for DVT prophylaxis, there is no reliable evidence that below-the-knee stockings are as effective as thigh-high stockings. In this randomized trial, the primary outcome was DVT in the femoral or popliteal vein on compression duplex ultrasound, done at days 7 and 30 after randomization. Thigh-high stockings proved to be superior, with an absolute difference of 2.5% (6.3% vs. 8.8%, p=0.008).

A Population-based study of Inferior Vena Cava Filters in patients with Acute Venous Thromboembolism

Spencer, FA et al., Arch Internal Med, 2010; 170(16): 1456-1462

This retrospective chart review studied the frequencies, indications and outcomes after IVC filter placement in a cohort of patients in Worcester, MA. Results showed that 13.1% of patients with confirmed VTE had a filter placed. A panel of thrombosis experts concluded that placement of the filter was appropriate in 51% of cases, was inappropriate in 26% and could not be determined in 23%. On average, patients with IVC filter placement had more co-morbidities and had a higher mortality that age-matched controls.

AVERROES Steering Committee and Investigators. Apixaban in patients with Atrial Fibrillation

NEJM 2011; 364:806-817

Apixaban is a novel factor Xa antagonist shown to be safe and effective in the prevention of thromboembolism after elective orthopedic surgery. In this study, patients with chronic atrial fibrillation who were unsuitable for vitamin K antagonists were randomized to apixaban (5 mg orally BID) or ASA (81-324 mg daily). Primary outcomes were the occurrence of stroke or systemic embolism. Patients in the apixaban group were less than half as likely as those in the ASA group to develop the primary outcomes (HR=0.45, [CI] 0.32-0.62, p<0.001). Rates of death and major bleeding did not differ significantly between the groups. Incidentally, the risk of first hospitalization for cardiovascular causes was significantly lower in the apixaban group (12.6% vs. 15.9% per year, p<0.001)

ID CORNER

WILLIAM SALZER MD

CYSTITIS & PYELONEPHRITIS

The IDSA has just updated its practice guidelines for uncomplicated cystitis and pyelonephritis:

International practice guidelines for the treatment of uncomplicated cystitis and pyelonephritis in women: A 2010 update by the Infectious Disease Society of America and the European Society for Microbiology and Infectious Diseases.

Gupta et al., Clin Infect Dis 2011; 52:561 http://cid.oxfordjournals.org/content/52/5/e103.full.pdf+html

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MISSOURI HOSPITALIST CALENDAR

Great Lakes Hospital Medicine Symposium, Practical Advances in the Care of the Hospitalized Patient, April 29, Sheraton Detroit Novi, Novi, Michigan, call 877-780-7787 or register online: www.cme.hsc.usf.edu (sponsored by University of South Florida)

Care of the Hospitalized Patient 2011, Eric P. Newman Education Center, Washington University Medical Center, Saturday, April 30; register at 800-325-9862 or online: http://cme.wustl.edu **LOCAL**

2011 American Geriatrics Society, May 11-14, Washington, DC; register online via www.americangeriatricssociety.org/annual_meeting

Please direct all comments, ideas and newsletter contributions to the Editor:

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Please forward this newsletter to Hospitalists that you might know!