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Foreword

"A Welcome Revival"

As I edited the May-June issue of *Missouri Hospitalist* last spring, I was resigned to the fact that it would be our final publication. That decision was prompted by my own retirement, this fall, and the acknowledgement that the time commitment of academic hospitalists has been stretched to its limit. Nevertheless, following the announcement, I received a number of emails from across the State, expressing both appreciation for our efforts over the previous four years and disappointment that the online journal would no longer be published.



Within two months of our final issue, I was gratified to learn that several interns at the University of Missouri wanted to re-launch *Missouri Hospitalist*. Drs. Ankur Jindal, Hariharan Regunath and Fatima Khan expressed concern that the educational and social benefits of the journal had been lost and committed themselves to reviving and editing that online publication. This issue is the first in what, I hope, will be a long series for their new journal, an expanded and improved version of the original edition.

It is also my hope that hospitalists across Missouri, both private and academic, will contribute to the ongoing success of this journal by submitting material for publication and by keeping all subscribers informed regarding regional events and educational opportunities that might be of interest to the group. In the end, the value of this project will be measured by the level of interest and engagement of those who receive it. I am honored that the new editors have taken up this challenge and I look forward to reading their journal for many years to come.

Robert Folzenlogen MD

HOSPITALIST'S UPDATE:

Meaningful opioid prescription and patient centered care:

Hariharan Regunath MD

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Pain management is an essential part of the patient-centered-care model, which is a major focus of health care systems nation-wide. The definition of patient centered care includes establishing a partnership among practitioners and patients, leading to decisions that respect patient's needs, and preferences. It provides patients with the education and support necessary to make decisions and participate in their own care. Frequently, the effectiveness of this model is misinterpreted based on results from "patient satisfaction" surveys. The results of such surveys likely influence changes in corporate health care policies that strive for good performance scores. Unintentionally, this may influence and increase physician prescription of opioids which are commonly prescribed medications for effective pain control.^(1,2)

Due to increasing concerns for inadequate pain control since the 1990s, opioids have become one of the most prescribed drugs in the United States. However the Institute of Medicine (IOM) in 2011 reported that 100 million Americans suffer from pain tolling an estimated \$635 billion annually due to treatment and loss of productivity.⁽³⁾ On one side is the battle to control pain that has resulted in a 400% increase in the prescription of opioids since 1998; on the other side is a corresponding increase in the number of deaths from opioid overdose, increased emergency room visits and drug abuse.⁽⁴⁾

The role of opioids in control of acute pain is well established, but the situation is different for chronic non-cancer pain (CNCP). The WHO defined CNCP as pain that lasts beyond 3 months of onset, when the healing process for the etiology of the pain is expected to be complete. Patients with CNCP on chronic opioid therapy (COT) who are admitted with pain exacerbation or new pain from acute medical illness, surgery or trauma, present a challenge for the inpatient medical team due to few known effects from chronic opioid use. These include opioid tolerance (reduced drug effects from long term use), opioid induced hyperalgesia (increased response to normally painful stimulus) and opioid withdrawal, the latter two resulting from abrupt cessation of COT. All three require opioid dose increase, therefore it is of paramount importance to achieve control of the background "chronic pain" to avoid opioid withdrawal and opioid induced hyperalgesia.

Control of "acute pain" also is treated with a dose of opioids that would account for opioid tolerance as well. A balanced and targeted approach to opioid dosing in the inpatient setting can help to avoid the above mentioned adverse effects.⁽⁵⁾ Soon after recognizing patients who require chronic opioid therapy it is essential to carefully consider their history of narcotic use. Attempts must be made to contact the patient's usual prescriber to better understand the risks and benefits of treatment strategy, the choice of opioid drugs, and the realistic goals of therapy. Failing this baseline assessment, pain management gets complicated resulting either in inadequate pain control or increased adverse effects from inappropriately high doses of opioids.

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HOSPITALIST'S UPDATE:

Continued.....

To guide ambulatory care physicians, the American Association of Pain Management (AAPM) 2009 guidelines enumerate the effective risk assessment strategies prior to initiating chronic opioid therapy (COT), but these strategies are based on expert opinion as no major studies or RCTs are available at this time.⁽⁶⁾ Certain principles help in confident opioid prescribing and these are available from Federation of State Medical Boards (FSMB) in the form a book “Responsible Opioid Prescribing – a clinician’s guide”.⁽⁷⁾ In a state-wide survey of physicians belonging to primary care service, medical and surgical specialties, private and university based practices; who received this book 6 weeks prior to the survey, 57.7% indicated the book to be better than other known publications. The medical specialty services were much less likely than primary care providers to make changes in their practice.⁽⁸⁾

In recent years, the hospitalist team includes a significant number of physicians from medical specialty services. Patients face multiple hospitalists even within the same hospital. Every hospitalist needs to have a focused knowledge about appropriate and meaningful opioid prescription for pain control and these resources serve well. An essential concept is to have functional targets including improved quality of life, improved ambulation and sleep, rather than targeting pain relief alone. This approach may increase patient’s tolerance to pain and the threshold for need of medications thus leading to effective and minimum dose requirements to maintain an acceptable quality of life.⁽⁷⁾ With such meaningful and sensible opioid prescription practices better patient centered care can be provided and institutional goals may be well met.

Acknowledgement: I thank Dr. William C Steinmann MD for providing assistance with grammar and minor edits in the flow of language.

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CASE REPORT

Post renal acute kidney injury without significant hydronephrosis.

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Background

Post renal acute kidney injury (AKI) is characterized by an obstructive process preventing the flow of urine at any point from the renal collecting system to the urethra.¹ In order to have clinically evident renal dysfunction, a process causing bilateral ureteral obstruction must occur which is usually at the level of the bladder or urethra; or as in our case, a solitary kidney with obstruction of a single ureter.

Post renal AKI often presents with lower abdominal pain or a sensation of fullness and oliguria despite adequate hydration. A renal ultrasound (US) or non-contrast computerized tomography (CT) scan with renal protocol is useful to visualize a hydronephrosis and hydroureter. Hydronephrosis is an important finding for proximal post renal AKI. Renal US alone has a sensitivity of 80-85% in detecting hydronephrosis and when combined with CT scan detects hydronephrosis in > 90% of cases.²⁻⁴ This report highlights a case of postrenal AKI in which CT and US failed to identify a direct source of obstruction or significant hydronephrosis. Treatment is generally focused to relieve the obstruction.⁵

Case

A 37-year-old female presented to the emergency department of a community hospital with right-sided abdominal pain. The patient's significant past medical history included left donor nephrectomy five years ago, migraines, deep venous thrombosis (DVT), and uncomplicated abdominal hysterectomy twelve days prior. The patient had no prior history of renal dysfunction with a baseline serum creatinine of less than 1.0 mg/dl. She was diagnosed with a urinary tract infection one day prior to presentation, and was started on ciprofloxacin. On the day of admission to the outside hospital, the patient's serum creatinine was mildly elevated at 1.3 mg/dl. A contrast CT of abdomen and pelvis showed mild hydronephrosis on the right, however no hydroureter and no significant stone or obstruction. The patient remained anuric and her serum creatinine continued to trend up progressively following two liters of normal saline. A renal ultrasound study was performed and the findings remained consistent with the CT study: mild hydronephrosis without significant obstruction.

On hospital day two, when the patient was transferred to our facility, the differential diagnoses included ureteral stricture, acute intrinsic renal failure, pyelonephritis, ureteral injury from recent surgery, a passed renal calculus due to topiramate use for migraines, acute renal vein thrombosis and less likely from ovarian vein thrombosis as she had a history of DVT and recent abdominal surgery. A renal US with doppler study was repeated at our facility and the findings remained consistent with prior CT and US studies at the outside facility. Emergent dialysis was strongly considered for noted rise in serum creatinine to 6.7 mg/dl and non significant hydronephrosis on multiple radiologic studies. However, based on the patient's clinical history being notable for recent pelvic surgery, a decision was made to rule out an obstructive process, and a retrograde pyelogram was performed.

During the procedure, an apparent obstruction was visualized two centimeters from the ureteral orifice; the ureteral obstruction was a result of a ureteral stricture sustained during her hysterectomy. Following placement of the ureteral stent, there was immediate return of urine. The patient's renal function drastically improved to near-baseline in three days time, and she was eventually discharge home.

Discussion

Although postrenal AKI occurs in only 2-5% of cases in the inpatient setting, it is an important diagnosis to rule out as the management differs greatly from AKI due to other etiologies.⁶ Renal US is commonly the first study performed in detecting hydronephrosis. However, the sensitivity of renal US is 80-85% indicating the potential increased likelihood of false negative results. Unenhanced CT scan has a similar sensitivity in detecting hydronephrosis as US.⁷

The use of both CT and US increase the diagnostic yield, however, as demonstrated by our case, caution must be used in interpreting these studies. Therefore, if the clinical suspicion for ureteral obstruction remains high, this must be further evaluated despite a negative result on imaging studies.

Exclusion of ureteral injury following a gynecologic surgery appears imperative in the evaluation of postrenal AKI. Ureteral injury following gynecologic surgery is relatively common, with a reported frequency of 0.5-1.5%.⁸ Injury typically occurs more commonly in the setting of a surgery complicated by increased intraoperative bleeding; nevertheless it has been shown to occur following routine procedures as well.⁹ The presentation of ureteral injury following gynecologic surgery may occur immediately, or after some delay. We suspect that our patient's ureteral stricture was indeed a surgical complication with a delayed presentation.

Conclusion

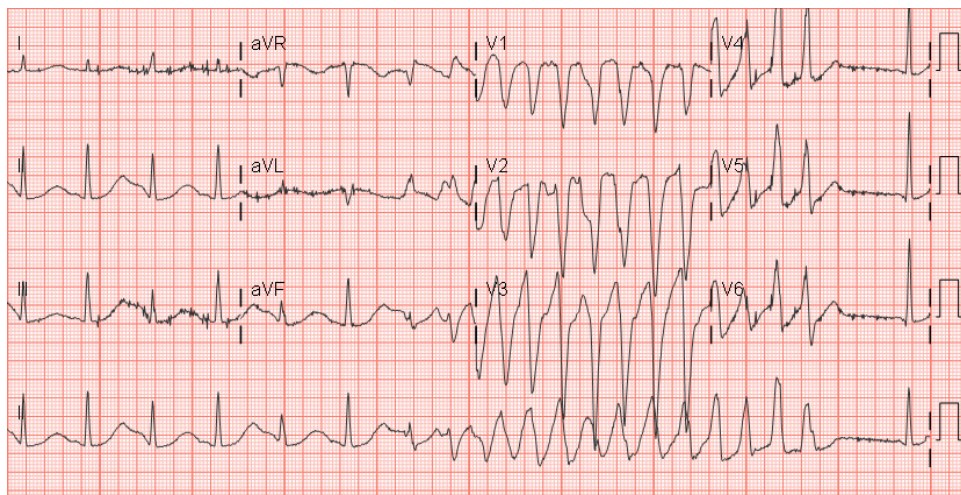
Renal US and CT scan are the mainstay diagnostic approaches for hydronephrosis; however, if the clinical suspicion remains high a negative finding may not necessarily exclude ureteral obstruction. As the recovery following prompt relief of an acute obstruction is quick and complete, further evaluation should be done without delay to avoid irreversible renal injury, worsening of renal failure and subsequent potentially life threatening complications.

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Diagnostic Dilemma!

ECG:



Electrocardiogram (ECG) of a 43 year old woman with chronic kidney disease (CKD). What abnormalities are suggested by this ECG?

(Answer: See Page 7)

Cardiology Quiz for hospitalist's practice: (Answers: See page 7)

1. 66 year old female patient is admitted for atrial fibrillation with rapid ventricular response. It is her second admission in the past year for atrial fibrillation. She spontaneously converted to sinus rhythm in 4 hours. Her other medical comorbidities include history of myocardial infarction 2 years ago and rheumatoid arthritis. Which of the following is the most appropriate medication to prevent stroke in this patient?

- A. Aspirin
- B. Clopidogrel
- C. Coumadin
- D. No medication needed

2. 76 year old male with history of atrial fibrillation, hypertension and congestive heart failure is on dabigatran. Patient presents with sudden onset of altered mental status after a fall. CT scan done in the ER reveals subdural hematoma with mid line shift. His creatinine at baseline was 0.86 mg/dl. Creatinine this admission is 2.8 mg/dl. You decide to reverse anticoagulation in view of subdural hematoma. Which of the following are agents to use to reverse anticoagulation with dabigatran?

- A. Prothrombin complex concentrate (PCC)
- B. Recombinant factor VII
- C. Dialysis
- D. All of the above

3. Which of the following strategies is associated with improved outcomes in patients with atrial fibrillation?

- A. Maintaining sinus rhythm
- B. Strict rate control resting HR <80 bpm and <110 bpm with moderate exercise
- C. Lenient rate control resting HR <110 bpm
- D. None of the above

4. All of the following agents are recommended for stroke prevention in atrial fibrillation except

- A. Rivaroxaban
- B. Apixaban
- C. Dabigatran
- D. Ticagrelor

Diagnostic Dilemma!

Discussion of ECG:

Mary L. Dohrmann, MD

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Marked prolongation of the QT interval in this patient with CKD should suggest critical hypocalcemia or other electrolyte abnormality such as hypomagnesemia. The QT interval is more than half the RR interval and measures 0.54 sec (0.64 sec corrected for rate). Other findings include polymorphic ventricular tachycardia (torsades de pointes), a consequence of QT prolongation. Other causes for QT prolongation should be considered, including congenital prolonged QT and drug effects. An excellent website for checking drugs that prolong QT is <http://qtdrugs.org>. Treatment in this patient, whose ionized serum calcium was 0.92 mmol/L and ionized serum magnesium was 0.26 mmol/L, included electrolyte replacement.

Answers to Quiz:

Sudharshan Balla, MD,

Fellow, Division of cardiovascular Medicine, University of Missouri School of Medicine

1. Answer: C

Patient is a candidate for coumadin in view of her CHA₂DS₂-VASc score. CHA₂DS₂-VASc scoring is as follows – Congestive heart failure -1, hypertension-1, age 65 to 75 yrs -1 and >75 yrs – 2, diabetes mellitus – 1, h/o stroke – 2, vascular disease -1 and female sex- 1. Patients with CHA₂DS₂-VASc score ≥ 2 should be considered for oral anticoagulation. Patients with CHA₂DS₂-VASc 1 are candidates for either oral anticoagulation (eg, vitamin K antagonist, for a target INR of 2-3) or aspirin 75 to 325 mg daily, but preferably an anticoagulant. In patients without risk factors (CHA₂DS₂-VASc score = 0) even antithrombotic therapy with aspirin is not indicated unless needed for other indications.

2. Answer: C

Dabigatran is cleared by dialysis and can be used in this situation to reverse anticoagulation. There is some experimental evidence to support the use of four factor PCCs (II, VII, IX and X), activated PCCs (aPCCs), and recombinant factor VIIa (rFVIIa).

3. Answer: D

AFFIRM trial showed no superiority of rhythm control compared to rate control. RACE II trial evaluated the lenient and strict rate control strategy and there was no difference in outcomes with respect to cardiovascular morbidity and mortality.

These rate control strategies are less relevant in highly symptomatic patients in whom rhythm control is the preferred strategy.

4. Answer: D

Rivaroxaban (ROCKET AF trial), Apixaban (ARISTOTLE trial) and dabigatran (RELY trial) have been shown to be useful in stroke prevention in non valvular atrial fibrillation. Ticagrelor is a newer antiplatelet agent and has not been studied in atrial fibrillation patients.

HOSPITAL MEDICINE VIRTUAL JOURNAL CLUB

Washington University School of Medicine

Abstracts & Full Links from recent journals of interest to Hospitalists

<http://beckerinfo.net/JClub>

FROM THE JOURNALS

The following articles should be of interest to Hospitalists:

Atrial fibrillation: New drugs, devices, and procedures.

Lindsay BD. Cleveland Clinic Journal of Medicine. 2012;79(8):553-9.

Duration of resuscitation efforts and survival after in-hospital cardiac arrest: an observational study.

Goldberger ZD, Chan PS, Berg RA, Kronick SL, Cooke CR, Lu M, et al. The Lancet. 2012.
<http://linkinghub.elsevier.com/retrieve/pii/S0140673612608629>

Hypoglycemia and Risk of Death in Critically Ill Patients.

NICE Sugar Study Investigators. New England Journal of Medicine. 2012;367(12):1108-18.

ID CORNER

WILLIAM SALZER, MD

MANAGEMENT OF ACUTE SINUSITIS

The IDSA has just released its practice guidelines for managing acute sinusitis:

IDSA clinical practice guidelines for acute bacterial sinusitis in children and adults

Chow, AW et al., Clin Infect Dis 2012; 54: 1041-1045

**MISSOURI
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MISSOURI HOSPITALIST CALENDAR



Pulmonary Nodule – Updates on evaluation, diagnosis and management. LOCAL

Venue: Eric P Newman Education Center, Washington University Medical Center, St. Louis, MO

Date: 11/16/2012

Email: cme@wustl.edu

Southern Medical Association 2012 Health Care summit

Venue: Gaylord Opryland Hotel, Nashville, TN

Date: 11/16/2012 to 11/17/2012

Link to website: <http://sma.org/summit>

Hepatitis C: Progress and Challenges. LOCAL

Venue: Monsanto Auditorium, Life Sciences Center, University of Missouri – Columbia, MO

Wednesday, Nov. 28, 2012, from 1:15 PM to 2:15 PM

42nd Annual Presentation of the Dr. Robert D. Conn Heart Conference. LOCAL

Venue: Westin Kansas city at Crown Center

Date: 12/6/2012, 12/7/2012, From 7AM to 5PM

Contact: UMKC SOM CME Program Office: 816-235-6808

Congestive Heart Failure Update. LOCAL

Venue: Eric P. Newman Education Center, Washington University Medical Center, St. Louis, MO

Date: 12/08/2012

Email: cme@wustl.edu

24th Annual National Forum on Quality Improvement in Health Care

Place: Orland, FL

Date: 12/9/2012 to 12/12/2012

Link to website: www.IHI.org/Forum.

Please forward this newsletter to Hospitalists that you might know!