



On NSAIDs for Back Pain, Post-Injury Venous Thrombosis, NT-proBNP Testing, Headache Following Mild TBI, ED Crowding and Pain Management, and Imaging After Neck Trauma

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Each month, Dr. Nahum Kovalski reviews a handful of abstracts from, or relevant to, urgent care practices and practitioners. For the full reports, go to the source cited under each title.

Non-Steroidal Anti-Inflammatory Drugs for Low-Back Pain (Review)

Key point: NSAIDs are more effective than placebo, are all similar in efficacy, and do have significant side effects. COX-2 seems to have fewer side effects; however, the recent data on CV side effects is a concern.

Citation: Roelofs PDDM, Deyo RA, Koes BW, et al. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD000396. DOI: 10.1002/14651858.CD000396.pub3.

The authors searched the MEDLINE and EMBASE databases and the Cochrane Central Register of Controlled Trials up to and including June 2007, selecting randomized trials and double-blind controlled trials of NSAIDs in non-specific low-back pain with or without sciatica.

In total, 65 trials (N=11,237 patients) were included in this review. Twenty-eight trials (42%) were considered high quality.

Statistically significant effects were found in favor of NSAIDs compared with placebo, but at the cost of statistically significant more side effects.

There is moderate evidence that NSAIDs are not more effective than paracetamol for acute low-back pain, but paracetamol had fewer side effects.

There is moderate evidence that NSAIDs are not more effective than other drugs for acute low-back pain.

There is strong evidence that various types of NSAIDs, including COX-2 NSAIDs, are equally effective for acute low-back pain. COX-2 NSAIDs had statistically significantly fewer side-effects than traditional NSAIDs.

In the authors' view, the evidence from the 65 trials suggests that NSAIDs are effective for short-term symptomatic relief in patients with acute and chronic low-back pain without sciatica. However, effect sizes are small.

Furthermore, there does not seem to be a specific type of NSAID which is clearly more effective than others. The selective COX-2 inhibitors showed fewer side effects compared with traditional NSAIDs in the RCTs included in this review. However, recent studies have shown that COX-2 inhibitors are associated with increased cardiovascular risks in specific patient populations.

Dr. Kovalski thanks Dr. Noam Ofek for this reference. ■



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Venous Thrombosis After Minor Injury

Key point: Minor injuries were associated with a threefold greater relative risk for venous thrombosis.

Citation: van Stralen KJ, Fosendaal FR, Doggen CJM. Minor In-

juries as a Risk Factor for Venous Thrombosis. *Arch Intern Med.* 2008;168:21-26.

Major injuries are a well-recognized risk factor for venous thrombosis; however, risk posed by *minor* injuries has not been fully studied.

In a case-control study, researchers in the Netherlands enrolled more than 2,400 consecutive patients with first venous thromboses and 3,500 controls to assess risk for developing venous thrombosis after minor injury. Patients who were undergoing surgery and those with malignancy, casts, or prolonged bed rest were excluded.

Nearly 290 adults with venous thromboses (11.7% of cases) and 4.4% of control subjects had experienced minor injuries (e.g., ankle sprain, knee sprain, "sural muscle rupture") during the preceding three months; the odds ratio for developing venous thrombosis was 3.1 with a minor injury, and this risk was greatest during the four weeks following an injury.

Individuals with minor injuries and positive family histories (first-degree relatives) for venous thrombosis had a 12-fold higher risk, compared with those without injuries or family histories. In addition, carriers of factor V Leiden who experienced minor injuries were 30 times more likely to develop venous thrombosis than were noncarriers without injuries.

Dr. Moloo noted that this case-control study highlights the need to remain vigilant of risk for venous thrombosis, even among individuals who suffer only minor injuries. Risk appears to be particularly high among individuals with family histories of venous thrombosis and among carriers of factor V Leiden. [Published in *J Watch Gen Med*, January 31, 2008—Jamaluddin Moloo, MD, MPH.] ■

Amino-Terminal Pro-B-Type Natriuretic Peptide Testing for the Diagnosis or Exclusion of Heart Failure in Patients with Acute Symptoms

Key point: NT-proBNP for the evaluation of the patient with suspected acute HF is useful, cost-effective, and may reduce adverse outcomes compared with standard clinical evaluation without natriuretic peptide testing

Citation: Januzzi JL Jr., Chen-Tournoux AA, Moe G. *Am J Cardiol.* 2008;101(3):S29-S38.

When used for the evaluation of patients with acute symptoms in the emergency department setting, amino-terminal pro-B-type natriuretic peptide (NT-proBNP) testing is highly sensitive and specific for the diagnosis or exclusion of acute destabilized heart failure (HF), with results comparable to those reported for B-type natriuretic peptide (BNP) testing.

However, the optimal application of NT-proBNP is in concert with history and physical examination, adjunctive testing, and

with the knowledge of the differential diagnosis of an elevated NT-proBNP level. Studies indicate a dual use for NT-proBNP, both to exclude acute HF (where NT-proBNP concentrations <300 ng/L have a 98% negative predictive value), as well as to identify the diagnosis.

To identify acute HF in patients with dyspnea, an age-independent NT-proBNP cut point of 900 ng/L has a similar value as that reported for a BNP value of 100 ng/L. However, age stratification of NT-proBNP using cut points of 450 ng/L, 900 ng/L, and 1,800 ng/L (for age groups of <50, 50–75, and >75 years) reduces false-negative findings in younger patients and false-positive findings in older patients, and improves the overall positive predictive value of the marker without a change in overall sensitivity or specificity.

Clinically validated, cost-effective algorithms for the use of NT-proBNP testing exist. Therefore, the logical use of NT-proBNP for the evaluation of the patient with suspected acute HF is useful, cost-effective, and may reduce adverse outcomes compared with standard clinical evaluation without natriuretic peptide testing. ■

A Prospective Controlled Study in the Prevalence of Post-traumatic Headache Following Mild Traumatic Brain Injury

Key point: Over 15% of patients with minor head injuries had persistent headaches at three months compared with 2.2% of the control group.

Citation: Faux S, Sheedy J. *Pain Med.* 2008 Feb. 5: 18266807 (Online Early Articles).

This was a prospective controlled study of patients admitted with a diagnosis of mild traumatic brain injury and matched orthopedic controls over 12 months during 2004, in a level-two inner-city emergency department in Sydney, Australia. One hundred eligible sequential admissions with mild traumatic brain injury, as defined by American Congress of Rehabilitation Medicine, 1993, and 100 matched minor injury controls with non-deceleration injuries were included.

Main measures were the reporting of headache "worse than prior to the injury" and concordant with the definition of post-traumatic headache according to International Headache Society Classification of Headache Disorders, 2003.

Of those with minor head injury, 15.34% continued to complain of persistent post-traumatic headache at three months compared with 2.2% of the minor injury controls.

To the authors' knowledge, this is the first controlled prospective study in the prevalence of post-traumatic headache following mild traumatic brain injury. ■

ED Crowding and Pain Management

Key point: Crowding is associated with nontreatment and

delayed treatment of severe pain.

Emergency Department Crowding is Associated with Poor Care for Patients with Severe Pain. Pines JM, Hollander JE. *Ann Emerg Med.* 2008;51(1): 1-5; discussion 6-7.

Inadequate pain management in the emergency department has received much attention recently, including by the Joint Commission. ED crowding is one of the many postulated contributors to inadequate or delayed emergency pain management.

In a retrospective study of nearly 14,000 patients who presented to an urban ED with severe pain (score of 9 or 10 on a 10-point scale), the authors examined whether ED crowding contributed to delayed pain management. The two measures of delay were administration of pain medication more than one hour after triage and administration more than one hour after arrival in a treatment area.

Measures of crowding were ED occupancy, total number of patients in the waiting room, and aggregate number of patient hours (length of stay) for all patients in the ED at the time the study patient presented.

During the 17-month study period, 49% of patients who reported severe pain received analgesia. Of those, 79% experienced delays: 59% waited more than one hour after triage, and 20% waited more than one hour after arrival in a treatment area.

The numbers of patients in the waiting room and ED occupancy were independently associated with both nontreatment of pain and delayed treatment.

Dr. Zane noted that ED crowding, in addition to being a growing problem and a symptom of a struggling healthcare system, might be associated with delay in pain treatment. Strategies to address severe-pain treatment in the setting of ED crowding include providing physicians or physician extenders at triage to initiate therapy and instituting standing orders for the administration of analgesia. The mystery in this study, though, is why 51% of patients who reported 9/10 or 10/10 pain did not receive any analgesia at all, crowded ED or not. [Published in *J Watch Emerg Med*, February 8, 2008—Richard D. Zane, MD, FAAEM.] ■

Imaging After Trauma to the Neck

Key point: Plain radiography is often used to image the neck after trauma, but computed tomography and magnetic resonance imaging provide further useful information and should be considered.

Citation: Wee B, Reynolds JH, Bleetman A. *BMJ.* 2008;336:154-157.

Technically adequate radiographs of the cervical spine are essential to avoiding missed injuries. Most missed spinal injuries occur in the upper and lower cervical regions, areas that are often not well visualized on poor quality films.

If a patient is alert and stable, taking an appropriate history, carrying out a clinical examination, and using guidelines such as the Canadian cervical spine rules allow safe and reliable risk stratification to guide decisions about radiographic tests

Computed tomography of the cervical spine is an appropriate first-line investigation in patients with suspected spinal injuries who have altered mental status, distracting injuries, or neurological deficits. It should also be considered in patients with multisystem trauma or severe head injury, which have a high incidence of cervical spine injuries

Magnetic resonance imaging provides excellent visualization of ligament and cord injuries if the patient is stable enough to be safely scanned. It may also provide valuable information in patients with an acute neurological deficit.

Dr. Kovalski thanks Dr. Noam Ofek for this reference. ■

Not A NICE CT Protocol for the Acutely Head Injured Child

Key point: Adherence to the NICE head injury guidelines would have resulted in a three-fold increase in the total number of CT examinations of the head.

Citation: Willis AP, Latif SA, Chandratre S, et al. *Clin Radiol.* 2008;63(2):165-169.

The purpose of this study was to assess the impact of the introduction of the Birmingham Children’s Hospital (BCH) head injury computed tomography guidelines, when compared with the National Institute of Health and Clinical Excellence (NICE) guidelines, on the number of children with head injuries referred from the emergency department undergoing a CT examination of the head.

All children attending BCH ED over a six-month period with any severity of head injury were included in the study. Indications for a CT examination according to both NICE and BCH head injury guidelines—and whether or not CT examinations were performed were recorded.

A total of 1,428 children attended the BCH ED following a head injury in the six-month period. The median age was 4 years (range 6 days to 15 years); 65% were boys. Four percent of children were referred for a CT using BCH guidelines and were appropriately examined. If the NICE guidelines had been strictly adhered to, a further 8% of children would have undergone a CT examination of the head. All of these children were discharged without complication. The remaining 88% had no indication for CT examination by either BCH or NICE and appropriately did not undergo CT.

Adherence to the NICE head injury guidelines would have resulted in a three-fold increase in the total number of CT examinations of the head.

The BCH head injury guidelines are both safe and appropriate in the setting of a large children’s hospital experienced in the management of children with head injuries. ■