Although there is a common belief that patients taking warfarin are at increased risk of intracranial bleeding in association with head trauma, there haven’t been a lot of clinical studies addressing this issue. The following paper makes it clear that our concerns in these patients are likely to be justified. Although there were only 16 patients in the study, it makes some important observations.

First, on average, these patients were in the therapeutic range for anticoagulation (INR of 3.0). In addition, falls were the most common source of injury associated with intracranial bleeding — the elderly have an increased propensity to fall and often times a history of falling is discounted as a cause of serious injury. Treatment with fresh frozen plasma, although routine in these cases, didn’t improve outcomes and 30-day mortality was high (50%).

Minor head trauma can precipitate ICH in anticoagulated elderly patients, mandating admission and CT scanning for all over 65.

Bottom line: The authors advise admission and CT scanning for all patients over age 65 who are anticoagulated, with strong consideration for reversal of anticoagulation for all patients except those with the most minor head injuries.

Unfortunately, it is unclear whether their sweeping recommendations are likely to be effective, and reversal of anticoagulation is, in itself, not without risk. In addition, the role of serial CT is not addressed in those patients who have initially normal CTs. Although there is some new light shed on this topic, important questions remain unanswered.

Even relatively minor head trauma can precipitate ICH in anticoagulated elderly patients.

Experts suggest admission and head CT scanning for all patients over age 65 who are taking oral anticoagulants.
was 11 (compared with 13 in controls). Eight of the 16 died within 30 days, as compared with 20 percent of the comparison group. There was no evident association between use of fresh-frozen plasma (FFP) and cryoprecipitate and outcome.

**CONCLUSIONS:** Although methodological flaws limit the meaning of these data, the authors feel that even relatively minor head trauma can precipitate ICH in anticoagulated elderly patients. They suggest admission and head CT scanning for all patients over the age of 65 who are taking oral anticoagulants, with strong consideration of interventions to reverse anticoagulation for all but those with the most minor injuries.

**MRI in Mild Head Trauma**

It is generally believed that CT scans are better for showing brain hemorrhage while MR imaging is better for demonstrating most other brain injuries. Here is a paper that largely refutes that belief. Although specifically addressing the nature of the pathology associated with Glasgow Coma Scale (GCS) scores ranging between 13 and 15 in head trauma, the study demonstrated that MR scans generally picked up the pathology noted on CT scans, and was substantially superior in determining the presence of other injuries.

Although the additional injuries noted on MRI were not amenable to surgery, the authors advocate supplemental MR imaging in patients with GCSs of 14 and in those with scores of 15 who have amnesia or advanced age to ascertain if demonstrable brain injury is present and its extent. Even though there was the potential for selection bias in this study (not all patients with scores of 13, 14, or 15 were studied), this paper clearly points out that significant brain injury can be present in these cases.

**Head trauma should not be classified as ‘mild’ in patients with a GCS of 13**

Stratifying intracranial air, subdural hematoma, subarachnoid hemorrhage, and/or cerebral contusion in four, and MRI demonstrated parenchymal lesions in all five. Six of 83 patients (7%) with a GCS of 15 had subarachnoid or subdural hematomas on CT. MRI was performed in four of the six, and showed contusions in two. Of the six patients having a GCS of 15 and CT abnormalities, four had amnesia after the event, and four were aged 72 to 78.

**CONCLUSIONS:** The authors suggest that head trauma should not be classified as “mild” in patients with a GCS of 13. They further recommend MRI rather than CT scanning in patients with a GCS of 14 because it is more likely to demonstrate abnormalities. CT scanning, and preferably MRI, also is suggested for older patients with a GCS of 15 after head trauma.

**tPA for Stroke**

In the March 1, 2000, issue of the Journal of the American Medical Association, a study was published that reported outcomes of tPA therapy for stroke occurring over a period of one year in all 29 hospitals in Cleveland. The outcomes were bad; the rate of intracranial hemorrhage in the 70 patients was 22 percent (15 patients) and of the 11 patients with symptomatic bleeds, six died. In-hospital mortality was 16 percent for the tPA-treated patients and seven percent for the controls.
A 50-year-old man presented to the ED complaining of acute shortness of breath and nausea over the past day. He denied chest pain, abdominal pain, vomiting, orthopnea, or PND.

He had a history of atrial fibrillation, hypertension, and CHF. His medications included furosemide, potassium, digoxin, and aspirin daily.

On examination, the patient was in moderate distress with vital signs of 106 beats/minute, blood pressure 96/52 mmHg, and respiratory rate 18 breaths/minute. His chest examination revealed clear breath sounds bilaterally. His cardiac examination demonstrated a regular tachycardia without murmurs, rubs, or gallops.

Extremity examination revealed 1+ pitting edema at the ankles bilaterally. An initial ECG was obtained (Figure 1). Within 30 minutes of arrival, the patient complained of recurrent palpitations and developed episodic hypotension. A repeat ECG was obtained (Figure 2). What is your interpretation of the ECGs and the patient’s diagnosis? See p. 30.

**REFERENCES**

- Figure 1: Initial ECG demonstrates atrial fibrillation with frequent PVCs in a bigeminal pattern.
- Figure 2: Subsequent ECG demonstrates a bidirectional ventricular tachycardia with alternating wide-complex QRS morphologies.

**C A S E S I N E L E C T R O C A R D I O G R A P H Y**

**The Symptoms: Acute Onset Shortness of Breath, Nausea and Atrial Fibrillation**

*By Theodore Chan, MD, William Brady, MD & Richard Harrigan, MD*

**Continued from previous page**

**HEAD TRAUMA**

A comparable patients not treated with tPA. Although NINDS protocol violations were noted in half of the cases, there appeared no relationship between violations and the development of symptomatic intracranial hemorrhages.

Given the results of the Cleveland study, it would be of particular interest to assess stroke outcomes in other communities. The title of the next abstract suggests assessing stroke outcomes in other communities. Unfortunately, the title is very misleading.

Violations and the development of symptoms seemed to be no relationship between comparable patients not treated with tPA. Initially, there were noted in half of the cases, there seemed to be no relationship between violations and the development of symptomatic intracranial hemorrhages.

Even so, it is not likely that only two to four percent of stroke patients would qualify for tPA treatment due to the 180-minute window in which it can be initiated, a surprising 8.7 percent of all patients presenting with symptoms of cerebral ischemia were treated over the four-year period of the study. The symptomatic hemorrhage rate was only 5.6 percent, less than that in the NINDS trial. The authors acknowledge, however, that their method of data collection had resulted in an undercounting of the hemorrhage incidence. Even so, it is not likely to be the 16 percent noted in Cleveland.

The authors also note that their center “is not typical of most hospitals taking care of stroke patients.” This is just the crux of the concern regarding this study. It does not represent the experience in Houston at all. It represents the experience at four hospitals with extensive experience and a strong commitment to stroke care.

The question concerning the use of tPA is not how the expert hospitals and physicians manage stroke patients, but rather the applicability of this therapy to all community hospitals because this is what is currently being recommended by those who are staunch supporters of this therapy.

**Continued on page 31**

**METHODS:** This implicit chart review, from the University of Texas at Houston examined the use of IV tPA for acute ischemic stroke from 1996 through 2000 at one university and three community hospitals served by a dedicated stroke team (available 24/7). Team members had participated in the NINDS trial, and were immediately notified by EMS or ED personnel on presentation of a potential candidate.

**RESULTS:** The team treated 264 patients with tPA, including nine percent of cases for which the stroke team was alerted at the university hospital. The mean “door-to-needle” time was 70 minutes, and the median interval from symptom onset to treatment was 137 minutes. Treatment protocol violations were identified in 13 percent of cases. The rate of symptomatic ICH was 5.6 percent overall, ranging between 3.6 percent and 9.1 percent at the four hospitals, and was 15 percent in the subset of patients with a protocol violation. Mortality rates were 15 percent in-hospital, as well as 18 percent in the 123 survivors with follow-up information (range, 1-48 months).

**CONCLUSIONS:** The authors claim that up to 15 percent of patients with acute ischemic stroke can be treated with IV tPA, with a low rate of symptomatic ICH, in hospital systems with an experienced team.
Help for Dysfunctional EDs

It is my contention that most EDs are run poorly from an operational perspective, and I perceive a plethora of opportunities for process improvement in the majority. We’ve done charge capture audits at more than 30 hospitals, and all have demonstrated major opportunities to improve revenue without increasing fees or treating more patients. Most EDs, however, continue to have nurses perform ED charging, a fundamental mistake that occurs in virtually every ED. This is just an example. There are myriad problems associated with time-wasting formal triage, non-bedside registration, inappropriate staffing mixes, and lack of facilitated documentation — you name it.

Intoxicated trauma patients do not appear to require routine hospital admission for observation because of intoxication

The question then is how to identify those EDs with exemplary processes, and transfer these processes to the more dysfunctional EDs. The following paper addresses how this was done in one system. Through the use of a formalized program of measurement, education, and consultant-driven best-process identification, clear-cut improvement was able to be demonstrated. Given the overcrowding situation going on at most hospitals, meaningful efforts to improve ED process are essential if EDs are to optimize the opportunity to provide care. It is surprising that more EDs haven’t embraced such efforts; they generally are very productive and well worth the effort.

Distribution of information on the ED’s subprocesses was associated with a reduction in the length of stay

The question then is how to identify those EDs with exemplary processes, and transfer these processes to the more dysfunctional EDs. The following paper addresses how this was done in one system. Through the use of a formalized program of measurement, education, and consultant-driven best-process identification, clear-cut improvement was able to be demonstrated. Given the overcrowding situation going on at most hospitals, meaningful efforts to improve ED process are essential if EDs are to optimize the opportunity to provide care. It is surprising that more EDs haven’t embraced such efforts; they generally are very productive and well worth the effort.

Distribution of information on the ED’s subprocesses was associated with a reduction in the length of stay

METHODS: This study from Rose Medical Center in Denver and Empath Consulting used “best demonstrated processes” (BDP) methodology, first employed in industry, to analyze and then affect ED length of stay (LOS) in a multihospital system. A multidisciplinary team collect-
a reduction in the ED LOS that was most pronounced in the slowest EDs within this hospital system.

**No Observation for Intoxicated Trauma Patients**

Finally, this paper reiterates the fact that intoxicated trauma patients without apparent serious injury rarely benefit from mandatory admission for observation. In this study, exams performed after they were sober were not particularly more revealing with regard to missed injuries than those done in comparable patients who were not intoxicated.

The benefit of measuring blood alcohol levels or toxicology panels in these patients is unclear to me in the first place (except for the fact that the ATLS “guidelines” say to), given that study after study has indicated no increased morbidity or mortality in intoxicated trauma patients.

Some say that proving to patients that they were under the influence of intoxicants when they were injured may serve as a precipitant of some life-changing behavior. Given that this is highly unlikely, it is unclear what value waving a lab slip quantifying their intoxication in front of them is likely to have. Just tell them they were loaded, and, as a result, they screwed up badly; they are unlikely to dispute it. But then, that’s just my opinion.

**Does Alcohol Intoxication Alter the Assessment and Outcome of “Observation-Status” Trauma Patients?**

McCadams JS, et al
Am Surg 2001;67(11):1110
BACKGROUND: The evaluation of intoxicated trauma patients may be difficult, and such patients are often admitted for observation even when no significant trauma is initially identified based on the perception that they are at high risk for missed injuries.

METHODS: This retrospective study from the University of Tennessee Medical Center at Knoxville compared outcomes in intoxicated and sober trauma patients who were admitted for observation only. The intoxicated group included 66 patients with a blood alcohol level (BAL) of 80 mg/dl or higher (mean 218 mg/dl) with a Glasgow Coma Scale (GCS) score of 15 and a negative urine drug screen without known injuries requiring hospitalization beyond 24 hours. The unintoxicated group consisted of 160 patients with single-system injuries and a GCS of 15 who were admitted for inpatient observation.

RESULTS: There were no differences between the groups in mean age or mean Injury Severity Score (5.3 and 6.5). In the BAL-positive group, there were two complications (a pleural effusion and a urinary tract infection) and one delayed diagnosis of a nondisplaced radius fracture. In the BAL-negative group, there were three complications and one delayed diagnosis. There were no differences between the groups in the use of diagnostic tests, conversion to full admission status or hospital charges.

CONCLUSIONS: Intoxicated trauma patients with an otherwise unremarkable evaluation do not appear to require routine hospital admission for observation on the sole basis of intoxication.

Dr. Bukata is the medical director of the emergency department at San Gabriel Valley Medical Center in San Gabriel, CA, an associate clinical professor in the department of emergency medicine at Los Angeles County/USC Medical Center, and the editor of Emergency Medical Abstracts.