Additional considerations involve a period of stabilization using the EOA in the emergency department as compared with the endotracheal tube (with which gases were obtained after a period of stabilization), and whether one can assume arterial sampling in the absence of an arterial cut-down. Furthermore, the new cardiac arrest patient presenting to the emergency department is confronted by changes of operator, transport, restabilization, and disorganization of the CPR effort.

The stabilized patient in the emergency department probably reacts differently to the immediate arrival from the field, and the transitional period from the field or the methodology used are potentially responsible for the differences in the results. If effective CPR is given in the field and the methods are identical to those in hospital, the explanation may well point to inhomogeneity of the total CPR effort during and shortly after transport to the emergency department. These comments are equally applicable to $P_{CO_2}$, the magnitude of which in the Smith et al and Auerbach and Geehrs series differs from that in the other series, perhaps reflecting difficulties in ventilation and CPR encountered during this period of transition.

Comparison of blood gases done in the field by each of these techniques had not yet been made. In addition, considering the data on survival and its inverse correlation with “apnea time,” statistics of survival comparing one device used in the field against the other would reveal highly relevant clinical information. Standardizing volumes with a bag-valve mask may necessitate a spirometer, better methods in the field to ensure good mask fit, and possibly two rescuers (as compared with the fixed volume oxygen device such as the Elder valve, which delivers reliable volumes and ensures a good seal). However from the data it would seem clear that either the EOA or endotracheal tube, used under standardized conditions with 100% oxygen, good mask fit, and standardized volume, is likely to be equally effective.

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"ASYMPTOMATIC" CERVICAL INJURIES: A MYTH?

To the Editor.—McCabe and Angelos found that 44 (54%) of 81 patients with acute cervical spinal fractures had no facial or head injuries. Walter et al also recently reported lack of associated craniofacial injuries in 31 (46%) of 67 cervical fractures. McCabe appropriately warns not to exclude cervical injury simply because of the absence of facial or head injuries and urges “liberal” use of cervical radiography in the emergency department. Unfortunately, his statement that some patients with cervical spinal injuries “may not have symptoms” may lead to excessive cervical radiography.

A patient’s mental status that is clouded by alcohol, drugs, or head injury makes any assessment of cervical symptoms unreliable. Multiple painful injuries may distract a patient from his cervical pain or tenderness or divert medical attention to more obvious injuries. Cervical-spine radiographs are indicated in any such patients with a “suggestive mechanism of injury.” However, despite several reports alluding to asymptomatic cervical injuries, none have been documented in alert, cooperative patients unimpaired by the above factors.

Bresler describes a single patient with “mild” cervical tenderness after an alcohol-related accident. Maul refers to unspecified personal experience, urging alertness to the possibility of major cervical spinal injuries with “minimal” (not absent) associated pain or physical findings. Thrambyrajah reports on four patients, but each had neck pain, tenderness, sensory radiculopathy, history of loss of consciousness, and/or alcohol intoxication. Bohlin has also been cited, but his review of 300 acute cervical injury patients does not mention asymptomatic cervical fractures.

Walter et al state that 12 (18%) of 67 patients in their retrospective study had “no complaints of neck pain or stiffness documented during initial questioning.” The key word is “documented”: their methods would not distinguish between charting deficiencies and actual absence of symptoms. Indeed, ten of the 12 patients had cervical tenderness, alcohol intoxication, loss of consciousness, and/or neurological deficit documented initially. Of the remaining two, one (“32/F”) was sent home after neck radiograph results were deemed normal. When called back the next day because of an C2–3 subluxation noted by the radiologist, “neck stiffness” was documented. The condition of the last patient (“45/M”) was diagnosed some three weeks after initial evaluation, when he complained of neck pain while hospitalized for hemorrhagic gastritis. (Could the gastritis have been related to on-going alcohol abuse not documented initially, or to excessive aspirin use for his “painless” odontoid fracture?) Walter reports that 11 patients with cervical spinal injuries had cervical spinal range of motion said to be “normal.” All 11 had significant mechanisms of injury; eight of the 11 complained of neck pain or stiffness. Of the three reportedly without neck pain or stiffness, “21/M” had been unconscious and was still incoherent, “40/M” had a C5-C6 deficit and possible unconsciousness, and “32/F” had a frontal hematoma. Despite these contraindications, all 11 were subjected to cervical range-of-motion examination before radiological clearance. Another intoxicated auto accident victim (“73/M”) with a scalp laceration and questionable loss of consciousness developed a T1 sensory/motor
level four hours after presentation. With such management, chart accuracy relative to the cervical spine is suspect.

Numerous reports document cervical injury in patients with mild symptoms and physical findings. Any patient with relevant mechanism of injury and impaired mental status, injuries elsewhere that distract attention, or any cervical symptoms merits cervical spinal protection until after radiologic clearance. Clinical signs and symptoms can guide the evaluation of other unimpaired, cooperative patients. Radiographs ordered out of fear of missing asymptomatic cervical fractures add needlessly to the cost of emergency care.

Communication is welcome about any alert, cooperative patients with cervical fracture or ligamentous disruption and no signs or symptoms on careful history and physical examination. Otherwise, the "asymptomatic" cervical injury may be a myth.

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The opinions expressed herein are those of the author and are not to be construed as official or reflecting the views of the United States Army or Department of Defense.

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To The Editor—Our study could not and did not reach any conclusions about the entity of the "painless" cervical spinal injury. The "take-home" message of our paper instead concerned the discrepancy between the clinical presentation of patients with acute cervical spinal injury seen in community hospital emergency departments versus previously reported findings primarily derived from tertiary care centers. Specifically, regarding history of loss of consciousness, associated craniofacial injuries, and sensorimotor examination, we found that cervical spinal injury may have a less dramatic presentation than heretofore realized.

We share Dr. Gatrell's scepticism about the entity of the "painless" cervical spinal injury. Because of the continuing anecdotal reports in the literature, we thought it would be valuable to include a detailed table describing the twelve patients in our series with no documented complaints of neck pain on presentation. Dr. Gatrell has correctly summarized the data included in this table.

Our data suggest that cervical spinal injury is most likely to be overlooked in patients with altered mental status and multiple injuries who may not have any spontaneous complaints of neck pain. We agree that in these subsets of patients the absence of neck pain cannot be equated with "painless" injury. In these patients, "occult" cervical spinal injury is a more accurate descriptive term, implying injury that is hidden or not apparent to the examining physician. The importance of our study is that it again documents the not infrequent occurrence of "occult" cervical spinal injury in the intoxicated, confused, and multiply traumatized patient—a clinical fact that accounts for significant and continuing patient morbidity. In Bohlman's series, the diagnosis of cervical injury was missed in the emergency department in 100 of 300 patients (primarily in those with intoxication, head injury, or multiple other injuries). Williams et al., in a review of 50 patients with cervical fractures, reported that altered state of consciousness and multiple injuries accounted for the physician's missing the cervical lesion in 26% of patients on initial examination. Finally, Bucholz et al., in a study on "occult" cervical spinal injuries in fatal motor-vehicle accidents, found a 24% incidence of cervical spinal injury, half of which were not clinically suspected prior to death. The possibility of "occult" cervical spinal injury in these subsets of patients and the high index of suspicion required to avoid diagnostic errors deserves re-emphasis.

We could make no comment from our data, about whether "painless" or "occult" cervical spinal injury is an important entity in other subgroups of patients. Such a determination awaits a carefully monitored, prospective study.

Cervical motion was reported within normal range in 11 of 34 patients tested. This surprising finding again highlights the subtle presentation in certain patients with cervical spinal injury. In the patient with suspected cervical spinal injury, cervical manipulation before radiography is not only potentially dangerous, but also unreliable in ruling out underlying injury. We feel our study was important not only in describing the clinical presentation of patients with cervical spinal injury but also in documenting standards of care as practiced in two community hospitals staffed largely by residency-trained emergency physicians. Deficits in clinical management may well reflect similar deficits in numerous other hospitals, and these must be reported. We fail to see how the documentation of unwarranted assessment of cervical range of motion or the documentation of a late-developing sensory/motor level (whether secondary to inadequate immobilization or progressive edema and injury) in any way impugns the accuracy of the charts we examined.

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