Brain Stem Lesions Worsen Head Injury Outcomes

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — The largest series of head injury pa-
tients to undergo magnetic reso-
nance imaging found brain stem
injuries in 60% of 200 patients, a
much higher rate than the 10% usu-
ally quoted in the literature. Dr. Raimund P. Firsching re-
ported at the annual meeting of
the American Association of
Neurological Surgeons. Fewer than 1 in 10 brain stem
lesions were visible on CT scans, he said.
Investigators performed CT
and MRI scans on patients with
in a week of head injury; all pa-
tients were in a coma for at least
6 days. Functional and mortality out-
comes 3 months after injury
were associated with the location of brain
injury on MRI, with much worse prog-
oses in patients who had brain stem
lesions, said Dr. Firsching, of the depart-
ment of neurosurgery at Otto-von-
Guericke University, Magdeburg, Ger-
many, who conducted the study with Dr. Dieter Woessneck, also of the university.
The results also support the commonly
held notion that when CT shows no le-
sions after brain trauma, a patient’s failure to improve must be a result of diffuse brain injury, Dr. Firsching said.
Among patients who emerged from
coma after 1 day, 63% had brain stem
lesions seen on MRI.

The longer the coma lasted, the greater the likelihood of brain stem lesion: of pa-
tients who were in a coma for 1 week, 96% had brain stem lesions. “This is rea-
ly in sharp contrast to the literature,” he noted.

The imaging could not differentiate be-
tween primary and secondary lesions, he acknowledged.

Commenting on the study at the meet-
ing, Dr. Ross Bullock said that it was
limited by not identifying posthemor-
rhagic changes in the brain, by not
reporting how many patients had lesions removed, and by not discussing the implications of high intracranial pressure with the MRI findings.

“If these data represent simply a very
high, unusual incidence of herniation, that’s not a real problem from our
knowledge base,” said Dr. Bullock, the
Reynolds Professor of neurosurgery at Virginia Commonwealth University, Richmond, Va.

At his institution, MRIs on 13 patients with trauma brain found lesions in 10%, he noted.

Among all patients in Dr. Firsching’s study, 13% had supratentorial lesions con-
fin to the hemispheres or the corpus cal-
losum; two-thirds of this group had a
good outcome, and 10% died. Dr. Firsching reported. A lesion in a unilater-
lar region of the brain stem, seen in 20%
of patients, was associated with a slight or moderate functional handicap after 3 months, and 21% of these patients died. Severe disability was likely in the 22% of
patients with bilateral mesencephalic
lesions, and 21% died. Among the 21% of
patients with a bilateral pontine lesion, 92% died.

Lesions on the corpus callosum did not
predict the likelihood of death or the length
of coma, he added. Pontine and midbrain lesions, which CT failed to de-
tect, are most important for prognosis, he emphasized.

In nearly 10 years of doing MRIs on
brain trauma patients, “we have yet to see
a patient who was in a vegetative state who did not exhibit a bilateral pontine le-
n, Dr. Firsching said.

The investigators began the series of
MRIs on head trauma patients, “we have yet to see a patient who was in a vegetative state who did not exhibit a bilateral pontine le-
n, Dr. Firsching said.

The injuries began the series of
MRIs on head trauma patients, “we have yet to see a patient who was in a vegetative state who did not exhibit a bilateral pontine le-
n, Dr. Firsching said.

The injuries began the series of
MRIs on head trauma patients, “we have yet to see a patient who was in a vegetative state who did not exhibit a bilateral pontine le-
n, Dr. Firsching said.