Proceedings of the 28th Annual Meeting of the Nordisk Neurokirurgisk Forening
(Scandinavian Neurosurgical Society)
September 1–4, 1976, Copenhagen, Denmark

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Clinical data available in the first few days after severe head injury have been collected prospectively on 600 patients from Glasgow and the Netherlands and stored on Computer; the patients in the two countries were similar in initial severity and in their outcome on a defined scale at six months. Calculated predictions of outcome were made in 200 randomly selected cases, using Bayesian statistics to compare the data from each patient with those from the 400 remaining cases whose outcome was known. Confident predictions (> 0.97 probability) were made in 44% of cases within the first 24 hours of coma, and in 52–61% when data up to three days were available. The higher confidence-rate occurred when prediction was limited to two outcomes (death or survival). Comparison of predicted with actual outcomes showed that 96–98% of confident predictions were correct. More logical clinical decisions should be possible when these predictions are available.


A series of 21 patients with head injury and subsequent complaints of memory and concentration difficulties had computer analysis of the energy distribution of the theta and delta activity of the resting electroencephalogram. Examination of data with correction for age indicated that there were abnormalities present which were greatest in the posterior cerebral areas and became less abnormal as the area
examined lay more anterior in the brain. This distribution was contradictory to the frequency distribution of the lesions seen in cerebral contusions. As a result it was felt that a mechanism other than the conventional contusion producing mechanisms must be operating.

Rotatory movements centred in the area of the craniocervical junction would best explain the location of the clinical and pathological manifestations of injury to the brain stem and upper cervical cord if one assumed that the centre of axis of rotation of the brain lies approximately 16 millimetres posterior the axis of rotation of the skull. This lack of congruence of the axes of the motion puts the neural fibres and blood vessels of the brain on stretch in rotatory movements of the skull. This stretch is present in the central and posterior brain and is greater the closer the point in the brain lies to the axes of movement. This is because generally on rotation of the skull the radii from various points to the brain axes shorten relative to the radii from the same points in the brain to the axis of movement of the skull. Certainly the brain can accomodate this amount of stretch under normal circumstances but in very rapid and/or excessive rotation there would be excessive and damaging elongation of neural fibres and blood vessels.

Further support for the existence of the proposed mechanism is the avulsion pathology of long tracts in brain and spinal cord and the neurophysical abnormalities following experimental head injury.


Retrospective analysis of 294 patients treated for epidural haematoma from the opening of the department in 1943 to 1973 was carried out. The material was divided into 10-year groups in order to disclose any difference of results throughout the 30-year period. The over-all mortality was 19% (1943–1953 22%, 1953–1963 18.9%, and 1963–1973 16.2%).

The main factors associated with increased mortality were studied. The level of consciousness at the time of operation was of special importance: mortality for patients who were alert 0%, drowsy 7.5%, stuporous 0%, comatose 22%, decerebrate 100%.

Other factors of importance were concomitant intradural lesions for which the mortality was: contusion and oedema 19.6%, subdural haematoma 29.5%, laceration 15.9%, and intracerebral haematoma 44%. In 230 patients the dura was opened, and in 20.6% of these no intradural lesion was found. Mortality for this group was only 5.8%. In 60 patients the surgeon found no indication to open the dura. Mortality for this group was 21.7%. From these figures we suspect that several of the patients, in whom the dura was not opened, had intradural lesions and therefore we recommend the dura be opened in every case.

Furthermore, the material shows that the removal of an epidural haematoma ought to be done through a craniotomy rather than through enlarged burr holes: mortality for the two methods of operation was 17.2% and 28% respectively.

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