RECOVERY FROM THE DECREBRATE STATE
ASSOCIATED WITH SUPRATENTORIAL SPACE-
TAKING LESIONS

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Extensor rigidity occurring in the course of various intracranial diseases has been described in many publications. The level of impaired neurological function responsible for the appearance of this phenomenon was demonstrated by the classical experiments of Sherrington and his co-workers, whose "decrebrate" animals duplicated almost exactly the extensor rigidity seen in man. Anatomical studies of some patients who prior to death displayed the features of "decrebrate rigidity" have revealed hemorrhages in the upper brain stem.

It was recognized early that the exhibition of the decrebrate attitude was of grave prognostic import, especially when it came in the course of supratentorial space-taking lesions—hemorrhage, abscess, or tumor. In fact, it has been and unfortunately continues to be, the opinion of many neurologists and some neurosurgeons in particular that the supervision of the decrebrate attitude mitigates against if not actually precludes the possibility of recovery regardless of therapy. It is the purpose of this report to present evidence indicating that prompt definitive surgery may be followed by survival and, in many instances, by complete recovery.

For the purpose of this discussion, the decrebrate attitude may be described as essentially one of extensor rigidity; the head is retracted, upper extremities are adducted and internally rotated, forearms extended and hyperpronated, and hands flexed. The fingers are usually flexed at the metacarpophalangeal joints but extended and adducted distally. Variations of the posture are observed, including flexion of forearm or alternation between the extended and the flexed positions. In that case, extension usually returns following strong mechanical stimulus. The lower extremities have always been found to be extended, adducted and internally rotated. The large toes may be rigid in the "chronic Babinski" position following stimulus. The tonic neck reflexes of Magnus and DeKleijn have been reported but we have not observed their presence in this series.

 Usually, alterations in the vital functions occur concomitantly with the appearance of the abnormalities of muscle tone: the pulse gradually increases in rapidity, respirations usually become rapid and blowing and are frequently characterized by irregular periods of apnea. The blood pres-
SURE MAY BE ELEVATED AND THE BODY TEMPERATURE FREQUENTLY RISES PRECIPITOUSLY IF UNCHECKED.

Abnormalities of pupillary function with respect to size and reactivity to light, and paresis of one or more of the extraocular muscles not infrequently accompany the decerebrate attitude.

During the past 20 years, a large number of patients manifesting this clinical phenomenon have been observed. The 19 patients selected for this report were studied on the Neurosurgical Service of Dr. Jefferson Browder at the Kings County Hospital, Brooklyn, New York over a period of 3 years (1947-1950) and all were personally observed by the author. In all instances supratentorial lesions were present and recovery followed appropriate surgical therapy.

In 14 cases bilateral extensor rigidity was present and in the remainder there was involvement of one or both extremities on one side. The underlying conditions included 12 subdural hematomas, 2 temporal lobe tumors, 1 frontal lobe abscess, 3 epidural hematomas, and 1 instance of dissolution of a temporal lobe following contact trauma of the head. In each case, operative treatment consisted of evacuation of the mass.

The duration of the decerebrate state before operation varied from less than 1 hour in 7 cases to as long as 20 hours in 2 instances. In 2 cases, the patients were admitted to the hospital in the decerebrate state with external evidence of contact trauma of the head but additional histories could not be obtained. In most cases, improvement following surgery was continuous but in 2 instances, evidence of rigidity reappeared after varying intervals and again disappeared following further appropriate surgical measures.

In only 3 cases were the pupils thought to be normal in size and in their response to light. They were widely dilated, equal and without reaction to light in 7 cases, unequal and fixed to light in 5, unequal with the dilated pupil fixed to light in 2, and unequal but reactive to light in 1. In no instance were the pupils “pinpoint.” In 1 case the state of the pupils was not recorded. In those instances wherein the pupils were unequal, the larger was ipsilateral to the intracranial lesion in 6 instances and on the opposite side in 1. In the eighth case the lesion was a huge bilateral frontal epidural hematoma.

Increased intracranial tension as evidenced by papilledema was observed in only 7 cases but that is not remarkable because most of the symptoms were of relatively short duration. It has been our policy not to disturb the cerebrospinal fluid dynamics where there is clinical evidence of dysfunction of midbrain structures and for that reason the cerebrospinal fluid pressure was measured in only 6 cases. In 4 of these the pressure was between 240 and 340 mm. water and in the other 2 it was 100 mm. water or less.

The degree of recovery varied between absence of any residual to severe and incapacitating defects requiring continued institutional confinement. Of those individuals having no demonstrable residual neurological disturb-