HISTOLOGICAL CHANGES OF THE SPINAL CORD IN PER-
NICIOUS ANEMIA APROPOS OF CASE OF DIFFUSE
DEGENERATION

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A man of 48 met with an accident four years ago, resulting in a considerable loss of blood. For three months he was confined to bed. He suffered from dyspnea; vertigo, and general weakness for two years. He then noticed a gradually increasing weakness in the upper and lower extremities, also numbness and tingling sensations in the limbs. At the end of six months there was complete paralysis of the arms and legs, and difficulty in micturition.

Upon examination marked weakness of both arms and legs was found with rigidity in the latter; the knee-jerks were much increased on both sides, Babinski's sign was present on both sides; sensations were diminished in the lower extremities, paresthesia was present in the arms; the sphincters were involved. Hemoglobin was 35 per cent., red cells 2,000,000, leucocytes 3,800. Megaloblasts, normoblasts, poikilocytes were present.

Gradually contractures developed implicating the upper limbs. Sensory disturbances of syringomyelic character followed. Bed-sores soon appeared and the patient rapidly grew weaker.

The spinal cord presented degenerative changes mostly in the lower cervical and upper thoracic segments. Weigert and Marchi showed old and recent changes in the anterior columns, Gowers' tract, direct cerebellar and crossed pyramidal bundles, finally in the posterior columns with exception of the area corresponding to the comma zone of Schultze. A great many vacuoles were found in the degenerated areas. Very few changes were seen in the cells of the anterior cornua. The blood vessels were not altered. The process of degeneration in the lower segments of the cord was less marked, so that in the lumbar portions the crossed pyramidal bundles alone were in a state of mild degeneration; only a few vacuoles were seen in the posterior columns.

The salient features of the case are: the anemia which developed after a profuse bleeding; the spinal cord symptoms which gradually made their appearance two years later; finally the incidental grippe which was followed by pulmonary tuberculosis; the anatomical changes consisted of a diffuse degeneration in the white matter of the cord.

The peculiarities of the case are the presence of syringomyelic symptoms which corresponded to the presence of degeneration in Gowers' columns, the absence of degeneration in the posterior columns below the upper thoracic segment, the presence of degeneration in the anterior columns, direct cerebellar and Gowers' tracts.

The present case militates against the adopted classification of cases of cord changes occurring in connection with pernicious anemia. Considering the various findings in all cases published heretofore, one must conclude that there are no special characteristic features. The variability in the findings is probably dependent upon the degree of intensity of the causative agent and upon its original localization. The pathological process is diffuse and not systemic in character. The poison follows the route of the nerve fibers within the cord without regard to neurone systems.