technical failure, only 3 cases should be lost and then the mortality rate could be dropped down to 1.7%.

h-2. Intracranial Hypertension following Subarachnoid Bleeding

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High mortality of subarachnoid bleeding appears to be dependent upon a rapid and intense rise of the intracranial pressure as well as vaso-spasms. When the bleeding is not so profusely as it causes an early death, the subarachnoid blood deposits produce the secondary intracranial hypertension (SIH).

Mongrel dogs were anesthetized lightly with thymal sodium and curalized under artificial respiration. Intracranial pressures were measured from the brain surface for periods of 2 to 3 days after the introduction of 4-5 cc of blood materials. Arterial blood pressures and EEG were recorded simultaneously. An injection of whole blood produced a moderate and temporary increase in the intracranial pressure. On the other hand, subarachnoid infusion of whole blood or blood cell suspension in the normal saline which had been incubated at body temperature for 2-3 days produced so intense SIH that the animal did not survive.

When SIH occurred, the pressure curves showed spike-like elevations (pressure waves) in a range of 200-600 mm H2O which superimposed on an elevated basal pressure level. The pressure waves could be classified in two types. One was relatively slow waves which appeared in the early stage, with duration of 40 sec. to 4 min. The other was sharp waves with duration of about 15-30 sec. It was particularly notable that while marked rises in the systemic blood pressure occurred synchronously with the sharp waves, opposite was true for the slow waves. In the stage when the multiple sharp waves occurred, EEG showed an appearance of spike waves diffusely in the brain stem reticular formation with flat corticogram. Barbiturates were most effective for controlling SIH as well as pressure waves. When using steroids together, the effects were remarkable.

It was suggested that some breakdown substances of hemoglobin was responsible for production of SIH in the delayed stage of subarachnoid bleeding. The appearance of pressure waves in the SIH indicated a stage of hyper-irritability of the cerebral vascular bed and the vaso-motor center. A sedative action seems most favorable for such a state.