MRF were observed. During cortical stimulation, the spike of 19 units (49.3%) which were activated by single vagal shock, were inhibited showing the decrease of spike numbers, prolongation of latency and decrease of discharge probability. No facilitatory effect from the cortex was recognized. During MRF stimulation, the spike of 12 units (29.2%) were inhibited, but 3 units (7.3%) were markedly facilitated showing the increase of spike numbers and the shortening of latency. The after-effect were not conspicuous in both cases of stimulation.

3) On 6 units (14.5%), the convergence was observed between cortical, reticular and vagal impulses. Single shockes to the cortex and MRF activated these units with shorter latencies than vagal stimulation.

4) Conditioning cortical stimulus inhibited the spikes produced by test vagal stimulus. The inhibitory effect was observed for 10–100 msec and was exerted even in the absence of any spike activation by the conditioning stimulus.

5) The changes of spontaneous activity of the NTS units were analysed and they were classified into 4 types by tetanic (10 cps) cortical and MRF stimulation. From these results, we concluded that the higher structures exerted the inhibitory mechanism also on the viscerosensory system as on the other somatosensory system.

100. Hyperbaric Oxygenation for Cerebroneurosurgery
(1st Report)

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In recent years, a study of hyperbaric oxygenation has remarkably improved in both United State and European countries. Hyperbaric oxygenation has been applied on clinical cases in the extensive field of medicine. Fundamental studies of hyperbaric oxygenation have been made by the authors using a chamber which was newly devised by us to learn the indication and therapeutic effect of hyperbaric oxygenation for cerebroneuro-
surgery.

Mongrel mature dogs were employed to investigate the changes of E.K.G. and E.E.G. at 1, 2, and 3 atmospheres pressure absolute using 100% of pure oxygen. No marked changes in this study were found. Blood pressure and central venous pressure tended to increase during pressurization in the chamber. Stepped increase or decrease in oxygen content was accompanied by pressurization or depressurization in the chamber. Acid base balance revealed slight degree of respiratory alkalosis and metabolic acidosis.

The influence of hyperbaric oxygenation upon the cerebral cortex, amygdala and hippocampus was investigated with the depth E.E.G. using cats. All patterns of the depth E.E.G. showed depression during pressurization at 3 atmospheres pressure in the chamber.

Oxygen concentration of brain tissue with the polarogram indicated to us the trend of decrease of oxygen concentration in the cortex by pressurization. There was no significant changes in the amygdala and hippocampus.

Furthermore, the effect of hyperbaric oxygenation on the dog of which the lateral common carotid artery was occluded has also been studied with the result of marked improvement of the E.E.G. at 3 atmospheres pressure absolute.

100% of pure oxygen let have the dog inhaled as soon as high amplitude and low voltage on the E.E.G., arrhythmia in the E.K.G. were detected in the dog for which only pure nitrous oxide was administered, and then, the dog was placed on the hyperbaric oxygen chamber. These changes disappeared by pressurization at 3 atmospheres pressure absolute of one hour's duration and returned to normal.

The authors described a clinical experience with CO poisoning we recently had. The patient with CO poisoning was 14 year old female. She accidently inhaled CO gas out of the transportation tube at home for 3 hours' duration, and was immediately placed twice by the authors on the hyperbaric oxygen chamber at 3 atmospheres pressure for 35 minutes. She completely recovered from CO poisoning.