STUDY REPORTS

1. Title: Malaria and the Nervous System: Cerebral Haemodynamics and Metabolism in Patients with Malaria and Central Nervous System Symptoms. The Response of the Diseased Cerebrovascular System to 5% Carbon Dioxide Inhalation and Hyperventilation.

Principal Investigators: Athasit Vejjajiva M.B., B.S. (Lond.), M.R.C.P.
Udomporn Kashemsant, M.D.*
Vajri Promtatvethi, M.B., B.S. (Lond.), F.R.C.S., D.A.

OBJECTIVE

The objective of this study is to investigate the physiologic factor which influence the cerebral blood flow and metabolism with emphasis on techniques for experimentally increasing blood flow, and to evaluate the possibility of modifying those factors which are said to cause brain disfunction in "C.N.S. malaria."

DESCRIPTION

See previous Annual Progress Report.

PROGRESS

In our previous report, it was concluded that the administration of 5% carbon dioxide and acetazolamide in combination had an additive effect in increasing the cerebral blood flow in patients with occlusive cerebro–vascular disease. In practically all those patients, there was predominant clinical and angiographic involvement of the carotid arterial system. A paper concerning these findings has been completed.

The study during the period under report has been aimed at investigating the effects of those vasodilators and of hyperventilation in patients with occlusive cerebrovascular disease in the vertebrobasilar system. However, no such patients were available for study. Since a few patients with definite brain–stem lesions following severe head injuries were accessible, it was thought that a similar study on them might provide useful information. Cerebral haemodynamics in these cases were therefore determined.

It was found that in six patients with decerebrate rigidity from severe head injuries of over one month's duration both inhalation of 5% carbon dioxide and hyperventilation failed to produce any significant change in total cerebral blood flow. The number of patients so far studied was still too small to allow any definite conclusion to be made. However, this interesting finding, if confirmed in a larger series of patients, would substantiate the recent hypothesis that the regulatory center for cerebral blood flow in the brain stem.

* Dr. Kashemsant withdrew from this study during the last quarter because of other institutional commitments and Dr. Promtatvethi joined the project.