

clinically, but great care must be taken about the safety in the human use of MAA by carotid injection. To measure the actual volume of the shunt flow, cannulation into the

internal carotid artery and the direct measurement of the blood flow in the artery are now in progress, and the results will be reported in the near future.

Brain Blood Flow Measurement with ^{131}I -Diiodo-Antipyrine

M. KITANO, M. KAGAWA, Y. ISHIDA, T. MINE and M. MIZUKAMI

Division of Neurological Surgery, Keio University, School of Medicine, Tokyo

H. TAKINO

RI Laboratory, Dinabott Co.

Antipyrine is one of the biologically diffusible indicators such as Xenon and Krypton, which cross over the capillary tissue membrane and distribute very rapidly within brain tissue water. The antipyrine uptake and elimination rates are determined by the effective capillary blood flow through brain tissue. The amount of tracer appearing in an externally monitored tissue is used as an indicator of proportion of cardiac output entering the tissue under examination. The present report describes the symmetry of the antipyrine uptake curve in the cranium as an indication of capillary flow following rapid intravenous injection.

About 300 subjects have been studied. In 30 subjects without known neurologic disease the count rate derived from each hemisphere is within 5% of equality. 6 cases were asymmetric out of 153 control cases in which include noncerebral neurological disease and systemic neurological disease. In 96 cases of diffuse cerebral disease such as alcoholic, degenerative, epileptic disease, 14 cases are symmetric. 86 patients with clinically verified cerebrovascular occlusive disease have been examined. In 17 cases of recent cerebral infarction, a significant disease of blood flow in the diseased hemisphere seen in the follow-

ing cases: 4 posttraumatic, 2 brain tumor (gliomas), 2 idiopathic epilepsies and 1 median nerve palsy.

Large arteriovenous shunts can be detected by an initial peak preceding the plateau on the count rate curve. This uptake test might allow a simple means of detecting A-V shunting. The initial peak is attributed to the failure of the isotope passing through the shunt to equilibrate with brain water as normally occurs upon passage through the brain capillary bed. This initial peak is aggravated following hyperventilation. This might be secondary to the shift of blood flow to the shunt from normal brain capillary. (intracerebral blood steal phenomenon).

In the study of brain isotope content in normals following carotid injection of antipyrine, the washout rate approximated those of ^{85}Kr and ^{133}Xe . However, largely because of recirculation of antipyrine, this tracer could not easily be substituted for the gaseous radioisotopes whose recirculation is negligible following arterial injection.

This antipyrine test is simple and atraumatic, and is suggested as a screening test or as a means of repeatedly studying a neurological population.