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### Cerebral Arteriography in the Dog and in Man with a Rapidly Excreted Organic Iodide.

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Up to the present cerebral arteriography has been carried out by the intracarotid injection of colloidal thorium dioxide.<sup>1, 2</sup> The objections and potential dangers inherent in the use of this drug are well known.<sup>3, 4, 5</sup>

Recently Robb and Steinberg<sup>6</sup> have used Diodrast (3,4-diiodo-4-pyridon-N-acetic acid diethanolamine) in a 70% solution by intravenous injection for visualization of the chambers of the heart, pulmonary circulation, and great blood vessels in man. They demonstrated the excellence of 70% Diodrast as a radiographic agent for this purpose. The absence of severe reactions and the complete and rapid excretion of this substance, which they reported, led us to study its possibilities for demonstration of the cerebral circulation radiographically.

In 7 dogs the common carotid artery was exposed under intraperitoneal sodium pentobarbital anesthesia. In 5 dogs 30 cc of a warmed 70% Diodrast solution was injected intracarotidly and X-rays of the skull taken during the injection. Excellent visualization of the arteries of the injected side of the brain was obtained. In one dog 30 cc of 35% and in another 30 cc of 50% Diodrast solution were used. Visualization of the cerebral circulation with the 2 lower concentrations was not adequate for clinical use. One animal to which a large overdose of the hypnotic had been given by error failed to recover from the anesthesia. The other dogs upon recovering from the anesthetic seemed to suffer no ill effects whatever. Two dogs were sacrificed at the 24th hour post injection and the brains removed. Grossly no abnormalities were observed. Preliminary histological examinations were likewise negative. Two more animals were sacrificed after 5 days and upon removal the brains appeared

<sup>1</sup> Moniz, Egas, *L'Angiographie Cerebrale*, Masson et Cie, Paris, 1934.

<sup>2</sup> Turnbull, F., *Am. J. Roent. and Rad. Ther.*, 1939, **41**, 166.

<sup>3</sup> Northfield, D. W. C., and Russel, D. S., *Lancet*, 1937, **1**, 377.

<sup>4</sup> Editorial, *J. A. M. A.*, 1937, **108**, 1656.

<sup>5</sup> Biskind, M., *Drug and Therapeutic Survey*, 1938, **1**, 21.

<sup>6</sup> Robb, G. P., and Steinberg, I., *Am. J. Roent. and Rad. Ther.*, 1939, **41**, 1.

grossly normal. The remaining dogs after 4 weeks appeared perfectly normal as to body weights and in actions and habits.

Following this experience in animals, 25 cc of 70% Diodrast solution was injected into the common carotid artery of each of 3 men. A transient reaction was noted during the injection in each case which was characterized by flushing of the skin, slight nausea and a temporary elevation of the systolic blood pressure by 20 to 34 mm. This was followed by moderate sweating and then slight headache lasting 2 or 3 hours. An X-ray film taken during the injection clearly visualized the cerebral arteries as illustrated in Fig. 1.



FIG. 1.  
Normal arteriogram obtained with 70% Diodrast.\*

*Summary.* The excellent results obtained in visualization of the cerebral arteries in dogs and man by the intracarotid injection of 70% Diodrast solution prompt us to recommend this method when such visualization is indicated.

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