CASE REPORT

UNUSUAL LOCAL COMPLICATION OF PERCUTANEOUS CEREBRAL ANGIOGRAPHY*

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In the past few years the medical literature has been flooded with articles concerning cerebral angiography, but we could find no report of a local complication similar to the one presented herein.

Among the many local complications that have been described are cervical hematoma, irritation of cervical soft tissues, temporary paralysis of the vagus, transitory punctate hemorrhages in the face, neck or eyes, cervical radiculitis, irritation and paralysis of cervical sympathetic nerves,1 external swelling, slight displacement of the trachea, tenderness at the puncture site and pain in moving the head and swallowing, and swelling and bruising of the mucous membrane of the pharynx.2 None of these is directly related to an artery or could lead to difficulties in diagnosis.

In the following case the intima of the common carotid artery was injured by the needle during percutaneous angiography with the result that our clinical diagnosis was wrongly influenced and proper treatment of the lesion was not done.

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Do. 115414. E.C., aged 50, was admitted as an emergency on May 1, 1953 at 8:00 p.m. For 5 weeks the patient had had increasing generalized headaches with progressive motor speech disturbances and weakness of the right limbs. Three days before admission he became somnolent and semiconscious in 24 hours.

Examination. The patient was deeply unconscious. Pulse rate was 44, and respiratory rate 12. There was slight swelling of the optic discs. The right pupil was slightly larger than the left and reacted sluggishly to light. Reflexes on the right were hyperactive with positive Hoffmann and Babinski signs on the right. Abdominal and cremasteric reflexes were abolished.

Clinical diagnosis: left-sided expanding lesion, probably temporal lobe tumour.

Percutaneous Carotid Angiography. Under intratracheal general anesthesia, puncture of the left carotid artery was easily performed. It may be mentioned that there was a strong flow of blood before each injection of diodrast during the procedure.

At the first injection visualization of the cerebral arteries was not obtained. As it was thought that this failure was caused by lack of timing the injections were repeated twice, with the same result. The radiologist, therefore, decided to place two films, one in the usual manner and a second at the neck in order to trace the course of the diodrast, since the operator was positive that the injections were made directly into the lumen of the artery, and there was no swelling of the neck. The angiogram obtained is shown in Fig. 1. A diagnosis of thrombosis of the internal carotid artery was made.

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Fig. 1. Occlusion of the common carotid artery, as shown in the upper of the two films used (see text). A valvula can be seen, or at least suspected, at the tip of the needle.

With the next injection the entire common carotid was visualized from its origin, and it was thought that the thrombosis began a few mm. from the bifurcation (Fig. 2). This film also eliminated the possibility of an intramural injection of the dye, for in such instances the artery appears to be blocked but is much larger than usual.

Although this last film (Fig. 2) was quite in favor of a thrombosis, the diagnosis was not satisfactory because of the clinical findings and history of the patient.

A right percutaneous angiography was performed. The elevation of the left middle cerebral artery and the displacement to the right of the right anterior cerebral artery sug-

Fig. 2. The entire common carotid artery is filled. A few mm. from the bifurcation, the internal carotid artery seems to be obliterated. The valvula is less evident than in Fig. 1.
gested an expanding lesion in the left temporal lobe. However, the diagnosis of thrombosis of left internal carotid artery prevailed and also because of the poor condition of the patient it was decided not to carry out trephine exploration of the left temporal lobe.

The following morning, the patient died. Autopsy revealed that the clinical diagnosis was accurate; there was a large spongioblastoma of the left temporal lobe.

The X-ray findings of the left angiography were understandable on examination of the common carotid artery on the left side. As shown in Fig. 3, there are two little holes in the artery and, just above, the intima of the artery has been sharply and neatly cut horizontally for about \(\frac{1}{2}\) of the entire diameter of the intima. This caused a peeling of the adventitia which formed a valvula, the opening end of which faced the blood flow.

When the artery was closed (Figs. 4 and 5) the flow of the blood dilated the valvula and obliterated the artery so that the diodrast was forced down stream.

If the angiograms (Figs. 1 and 2) are closely studied, one may suspect the valvula, dilated with the diodrast, with the point of the needle at its opening. Had we known that such a valvula could result from the puncture, we would have maintained our first diagnosis of a left temporal tumour.
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There seems to be a slight dilatation at the site of the blockage, which appears clearer on the lateral view. The point of the needle, as in our Figs. 2 and 3, would have an identical position.

COMMENTS

1. It is quite interesting to compare with our findings some of the angiograms published in articles on the diagnosis of thrombosis of carotid arteries. For example, an illustration in a paper by Koppang seems to show a similar kind of tip of the contrast medium (Fig. 6).

One may wonder (a) if the formation of a valvula by a ruptured intima of the artery is more frequent than supposed, and (b) if one should, as a routine, puncture the internal carotid artery every time percutaneous angiography of the common carotid shows a block, or even expose the internal carotid artery to verify the thrombosis, so as to be sure to eliminate the possibility of a traumatic valvula of the intima.

2. We think that the intima of the artery was punctured by the tip of the needle and then the cross section was made by a lateral movement of the needle. The force of the blood flow was enough to peel the intima and form the valvula (Fig. 7).

It therefore seems appropriate to advise the use of a needle with a short point that is as dull as possible in order to avoid such damage and to prevent the possibility of obtaining a film that may lead to the wrong diagnosis of thrombosis.
REFERENCES


