Retinal embolism after hysterosalpingography

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Fat emboli in the retina were reported after carotid angiography by Cogan, Kuwabara, and Moser (1964), and Rasmussen (1970) described embolism of oil to the retina after lymphography. The purpose of this paper is to record retinal embolism of oil after hysterosalpingography, a complication not hitherto reported.

Case report

A 31-year-old woman was investigated because of secondary infertility.

Operation

Hysterosalpingography was carried out under general anaesthesia using iodized poppy-seed oil containing 40 per cent. iodine (Lipiodol "F" Fluide, Laboratoires André Guérbet). The contrast medium was injected into the uterus under fluoroscopic control using a portable image intensifier. The Fallopian tubes appeared to be patent and a uterine septum was present. In a radiograph taken after screening, intravasation of Lipiodol into the uterine venous plexus and into the main pelvic veins was observed (Fig. 1).

FIG. 1 *Contrast medium in the uterine venous plexus and pelvic veins*

Course

On the morning after operation the patient was drowsy and her cerebation was slow. However, she was not confused or disorientated and she was easily roused. There were no other abnormal neurological signs. Dyspnoea and tachypnoea were noted but there was no cyanosis. A purpuric rash developed on the trunk, and the temperature and pulse rate were raised. Radiographs of the chest showed fine nodular shadowing throughout both lung fields (Fig. 2).

FIG. 2 *Fine and diffuse nodular shadowing in both lungs*

Laboratory investigations

Haemoglobin—14.1 g. per cent., white cell count—13,100 per cu. mm., platelet count—413,000 per cu. mm., thrombin time and fibrinogen titre—normal. There was no evidence of fibrinolysis. Blood urea and electrolytes—normal, blood culture—sterile, electrocardiograph—normal. There were no fat droplets in the urine or sputum.

The most likely explanation for the clinical picture was considered to be oil embolism following intravasation of Lipiodol into the pelvic veins. Iodine sensitivity was considered but was excluded by skin tests. Active treatment was not instituted. The dyspnoea, tachypnoea, tachycardia, and pyrexia gradually settled during the next 3 days. Normal cerebral function was restored after 1 week, and the purpuric rash had disappeared by the 10th day.

Ophthalmological examination

On the 6th day after hysterosalpingography the patient complained of blurred vision, and was referred to the ophthalmic unit. Her unaided visual acuity was found to be 6/36 in each eye, and this could not be improved. The only abnormal ocular feature was the appearance of the fundi. Here, bilateral macular oedema with contrasting dark red foveae was made more striking by the presence of numerous small yellow-white glistening spots; these were apparently in the arteriolar branches converging on the maculae. A few of these spots were seen in the peripheral regions of

the fundi. There were also a few cotton-wool exudates at the posterior poles. The central retinal vessels and their major divisions were normal and, in particular, there were no emboli within them (Fig. 3a,b).

Foveal sensitivity estimates were made with the Friedmann visual field analyser as follows:

<i>Filter setting</i>	<i>Right eye</i>	<i>Left eye</i>
2.4 log units	0/10	0/10
2.2 log units	8/10	6/10
2.0 log units	10/10	10/10

Treatment

Oral prednisolone was started in a dosage of 60 mg. daily and was gradually reduced over a period of 3 months.

Results

The visual acuity did not improve significantly during the first month of treatment, but it was 6/12 in each eye at the end of the second month, and after 3 months it was 6/9 and N6 in the right eye and 6/6 and N5 in the left. The macular oedema regressed completely, but a few glistening spots were still visible in the macular regions. Central field examinations were repeated with the Friedmann visual field analyser and Bjerrum screen but no abnormality was found.

The most recent assessment of this patient was made 6 months after hysterosalpingography. There was no change in the visual acuity and examination of the fundi revealed a few glistening spots as well as pigmentary changes in the macular regions of both eyes. Foveal sensitivity estimates were as follows:

<i>Filter setting</i>	<i>Right eye</i>	<i>Left eye</i>
3.0 log units	0/10	0/10
2.8 log units	10/10	10/10

Discussion

Hysterosalpingography, with either water-soluble or oil-based radio-opaque material, is used extensively in the investigation of infertility. Oily media may be carried as emboli to the lungs (Levison, 1963) and are associated with a greater incidence of sensitivity reactions and granuloma formation than aqueous contrast media (Griffiths, 1969). Nevertheless, they remain popular because of the superior image obtainable and because of their usefulness in demonstrating peritubal and other pelvic adhesions (Jeffcoate, 1953).

The problems of oil embolism may be minimized if hysterosalpingography is carried out with modern monitoring techniques, and if the investigation is stopped immediately should intravasation occur (Fullenlove, 1969). In the case reported here, the poor definition of images obtained during fluoroscopy meant that intravasation was recognized only at the conclusion of the procedure. More than the normal volume of up to 20 ml. Lipiodol was injected in an attempt to compensate for the poor quality of the screened images. It is recognized that the incidence of complications during lymphography with oily contrast media is related to the volume of material used (Rasmussen, 1970). Thus late recognition of intravasation and injection of a relatively large quantity of oily medium may account for the complications in this case.

Intravasation occurs in approximately 1 per cent. of cases submitted to hysterosalpingography with oil-based contrast medium (Jeffcoate, 1955). Lipiodol embolism to the lungs is usually without clinical effect, although Gajzago (1931) described a fatal case in which emboli were also found in the heart and kidneys. It is probable that adverse reactions would be less likely to occur if the subject was conscious at the time of hysterosalpingo-

FIG. 3a,b *Bilateral macular oedema*

graphy and was able to complain of untoward symptoms. However, curettage is carried out concurrently and usually requires anaesthesia.

Rasmussen (1970) reported a case of Lipiodol embolism to the retinae after lymphography. The ocular changes were not consistent with the degree of visual loss (*i.e.* doubtful perception of light) and in that case there was evidence of fairly severe neurological damage. It was concluded that the blindness was cortical in origin. Visual acuity returned to normal within 10 days.

In the case described here, the degree of macular oedema was sufficient to explain the visual acuity of 6/36 in both eyes. The glistening spots were thought to be Lipiodol emboli and the cotton-wool spots to be areas of retinal infarction from embolic arteriolar occlusion. Preponderance of emboli in the macular area is explained by the centripetal distribution of arterioles in this region. Retinal haemorrhages were not seen, although Rasmussen (1970) described them as a feature of his case and Marr and Marr (1962) referred to haemorrhages in their description of Purtscher's retinopathy, which is now believed to be due to fat embolism.

Duke-Elder (1954) stated that paraffin embolism almost invariably resulted in occlusion of the central retinal artery. In contrast, in this case, Lipiodol emboli were seen only in the smaller arterioles. It is postulated that the physical properties of Lipiodol and its passage through the pulmonary circulation (Sevitt, 1962) account for the small size of the retinal emboli and the sparing of larger vessels.

If larger vessels had been occluded this patient might not have recovered useful vision, but in the event the visual acuity improved slowly over a period of 3 months in parallel with the regression of macular oedema.

The principal cause of macular oedema was probably retinal ischaemia, but local reaction to Lipiodol may have been a contributory factor. Because of the latter consideration steroids were used in treatment, although their value in the management of macular oedema is questionable.

Summary

A case of oil embolism to the retinae after hysterosalpingography is described. The retinal changes regressed over a period of 3 months during which virtually normal vision was regained.

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