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MEDICAL MEMORANDA

Fat Embolism after Pertrochanteric Venography

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British Medical Journal, 1973, 4, 592

Petrochanteric venography is a useful and usually safe procedure which has gained widespread application in the investigation of the pelvic and iliac veins when pedal or per femoral techniques are inappropriate. A case is here reported where petrochanteric venography was complicated by a classical fat embolism syndrome.

Case Report

A man aged 54 was admitted to hospital complaining of a swelling of the right leg present for six weeks. Thirteen years previously he had suffered a venous thrombosis in the same leg complicated by pulmonary embolism. There was no history of cerebrovascular or cardiac disease and he was normotensive. He was thought clinically to be suffering from a right iliofemoral thrombosis. In the course of the investigation of this, right petrochanteric venography was performed. Two separate injections of 30 ml of angiografin (diatrizoic acid) were given plus test injections of 5 ml before each series of films. The injections were made through a Lea Thomas needle using hand pressure only (Lea Thomas 1969). The procedure was carried out under general anaesthesia and was uneventful. Eight hours later he became transiently hypotensive (80/60 mm Hg) but was otherwise well. After 18 hours he became sleepy, dysarthric, and confused and was pyrexial (38°C) and incontinent of urine.

When examined he was found to be sweating profusely; there was a tachycardia of 100/min and a tachypnoea of 36/min but no cyanosis. His chest was clear on auscultation but on examination of the nervous system the pupils were noted to be constricted and there was symmetrical hyperreflexia with sustained clonus of the ankles. Both plantar reflexes were extensor. Four hours later a fine petechial rash appeared on the face, trunk, arms, conjunctivae, and oral mucous membranes. Many fat globules were seen in the urine on microscopy. Blood gas estimation showed PO_2 65 mm Hg and PCO_2 30 mm Hg. chest radiography and E.C.G. showed nothing abnormal. The haemoglobin was 12.6 g/100 ml and there was no growth on blood cultures. The patient was thought to have suffered a fat embolism and was therefore treated with continuous oxygen, low molecular weight dextran (500 ml six-hourly), with hydro-

cortisone (200 mg intramuscularly six-hourly), and ampicillin (500 mg six-hourly).

The confusion cleared within two days and the blood gases returned to normal in four. The patient was eventually discharged well 17 days after the initial incident, the only residual sign being slight hypertonicity in the legs.

The patient was not heparinized after the initial episode, as this may be harmful in the presence of fat embolism (*British Medical Journal*, 1970). He was, however, given anticoagulant treatment by mouth after seven days without ill effect.

Comment

The symptoms in this case were clearly diagnostic of a systemic fat embolism, fitting exactly the diagnostic profile described by Thomas and Ayyar (1972). Many would accept the findings of lipuria as confirmatory; furthermore, the time of development of the symptoms tie its origin to the performance of venography.

Of the two theories about the mechanism of fat embolism we believe the theory of Gauss (1924), in which the embolism is considered to be of marrow fat forced into the circulation through ruptured venules, to be the primary explanation in this instance rather than Lehman and Moore's (1927) theory of changed intravascular emulsion stability. Whitenack and Hausberger (1971) found that ^{131}I -labelled triolein and olive oil injected into the tibial marrow cavity of rabbits passes rapidly to the lung when the marrow cavity pressure exceeds 50 mm Hg, and this effect is more readily obtained in unfractured bone than fractured bone. (Hausberger and Whitenack, 1972). It is hardly surprising that during petrochanteric venography some fat as well as contrast medium may be passed into the circulation, and a study is in progress to determine whether subclinical fat embolism is regularly produced during this procedure. The present report, however, appears to be the first on the development of a full fat embolism syndrome after petrochanteric venography. We were not able to identify any abnormal feature in the technique of venography that might have precipitated embolism on this occasion.

We believe that an awareness of the possibility that fat embolism syndromes may result from petrochanteric venography is important. For some of these syndromes may mimic pulmonary embolism in patients in whom pulmonary embolism, while not necessarily expected, is being watched for. Petrochanteric venography should nevertheless continue to be regarded as a safe and indispensable technique for the investigation of pelvic venous disease.

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