bear in mind the possibility of angioma even when a peptic ulcer is actually found at laparotomy, and especially when no such ulcer can be found.

We are grateful to Dr. C. S. D. Don and to Mr. R. L. Holt for permission to publish this case. Miss D. Davidson, Medical Artist, Manchester Royal Infirmary, kindly provided the drawing of the specimen.

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Medical Memorandum

Death following Injection of Paraffin into the Breast

Up to 20 years ago in Hong Kong it was considered indecent for Chinese women to have even a suggestion of a figure, and it was common for them to wear tight clothing to flatten their busts. But the advance of modern ideas, particularly through the medium of Western films, has changed this attitude. One method of improving the figure is the injection of liquid paraffin into the mammary glands, based on the use of such injections into the tissues in plastic operations, such as for the correction of nasal deformity. This has been practised indiscriminately, in some cases causing severe pain and leading to infection and sloughing.

In the following case the injection of paraffin into the breast for cosmetic reasons resulted in death from fatty embolism in the brain and lungs.

CASE REPORT

A Chinese woman aged 32, the mother of four children, who had been in poor health for some time, had arranged with a nurse to have a total of eleven injections of paraffin into her breasts to improve her appearance. She received the first three injections into the right breast at 3 p.m. on May 5, 1954. During and soon after the injections she experienced extreme pain and discomfort. Four hours later she felt giddy and faint and complained of severe headache. Her husband applied some Chinese medicinal oil to her face, forehead, and temples, and this seemed to relieve her. By 10.30 that evening she appeared to be asleep. About midnight she cried out, apparently in great pain, and this continued at intervals throughout the night. Early next morning her condition was worse, and a doctor was called in. He found her semicomatose and restless, with closed eyes; she was afebrile, but had a pulse rate of 100 per minute, regular but weak. Pupils were slightly dilated and reacted to light, more sluggishly on the left. Knee-jerks were exaggerated, but there was no neck rigidity or paralysis of extremities. Nothing significant was found in heart and lungs. There was no sweating. After prescribing for her he left.

As her condition did not improve another doctor was summoned at about 12.30 p.m. She was still semicomatose and with dilated pupils, but her right breast had become swollen and tender. Immediate removal to hospital for observation and treatment was advised.

By midnight the patient's condition had not improved despite energetic care, and a third practitioner was called in for consultation. She was then unconscious, with a temperature of 102° F. (38.9° C.) and incontinence of urine and faeces. The pupils were dilated and reflexes still present. The right breast was hot to the touch and swollen, and three puncture marks were noted. A diagnosis of cerebral paraffin embolism was suspected; ice packs were applied and nikethamide and nicotinic acid injections prescribed.

The patient was transferred next day to Queen Mary Hospital under the care of Professor A. J. S. McFadzean.

She was still unconscious, but her temperature had fallen to 100.5° F. (38° C.). She reacted to painful stimuli, and both pupils were small and reacted sluggishly to light. On auscultation there was diminished air entry with rales over both bases. Her condition progressively deteriorated and the coma deepened in spite of treatment, and she died 24 hours after admission. Necropsy was performed 20 hours later.

Post-mortem Findings.—The lips and nail-beds were cyanotic. The right breast was swollen and had three puncture marks, at 2, 5, and 9 o'clock, each about 5 in. (12.7 cm.) from the nipple. On reflecting the breast from the surface of the pectoralis major muscle about 10 ml. of clear oily fluid exuded from the under surface of the mammary gland. Incisions into the breast just under the puncture marks, and particularly in the lower medial quadrant, revealed globules of clear oil, which exuded from the yellow, semi-solid fatty tissue. A small haematoma mixed with oily fluid was present in the gland under the puncture mark at 9 o'clock. In the heart a thick layer of fat was visible under the visceral pericardium. The myocardium was soft and flabby. Petechiae were present on the endocardial lining and papillary muscle of the left ventricle and on the left interventricular septum. The bronchi contained frothy sanguineous fluid. The lungs were red and soft, with numerous petechiae on the surface. The cut surface was intensely congested. On squeezing the lung, frothy fluid mixed with oil globules exuded. Section of the kidney revealed a pale cortex and a slightly redder medulla. In the brain nothing abnormal was found in the basal arteries and soft meninges, but the cortical vessels were congested. The cut surface showed numerous minute petechiae spread over the white matter of the cerebrum.

Staining frozen sections prepared from brain and lung tissues with Sudan III resulted in red droplets appearing in the capillaries. These were considered by Professor P. C. Hou to be droplets of neutral fat, on the basis of an experiment in which he stained with Sudan III a mixture of liquid paraffin with human (neutral) fat, the fat droplets taking the stain but not the paraffin droplets.

DISCUSSION

When adipose tissues are lacerated, fat globules may enter ruptured venules and veins at the site of injury and be carried to the lungs. Most of the globules which reach the lungs are held up initially in the small arterioles, but by a process of moulding many of them ultimately pass through the pulmonary capillaries into the systemic circulation, in which they are carried to all tissues of the body and become lodged in the arterioles of such organs as the brain and kidneys.

The way in which fat globules enter lacerated or ruptured veins has not yet been established. In the case here described a blood vessel was ruptured, resulting in haematoma; in addition the high force needed to inject the liquid paraffin into the breast caused some displacement of the patient's own fat globules into the blood stream.

In cases of bone fracture it has been claimed that haematoma formation and inflammatory reaction at the site of fracture create a positive pressure in the marrow cavity which forces damaged fat cells into the veins. It has also been claimed that there is a negative pressure in the marrow cavity and that this has the effect of "sucking" damaged fat cells into the veins.

It is of interest that at the inquest on this patient the jury returned a unanimous verdict of manslaughter, and a warrant for the arrest of the nurse was issued by the magistrate sitting as coroner.

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