cells and medullary spaces having blood capillaries and scanty haemopoietic cells. The direction of the Sharpey fibres showed clearly that the osseous tissue had been subjected to continual mechanical stress.

Discussion

In retrospect the condition is considered to have been a perforated appendicular mucocele (in the sense used by Ferret in 1876) for the following reasons. There was a gelatinous condition of the peritoneum, and the pedicle of the tumour consisted of an appendicular remnant. On section the tumour showed portions of intestinal epithelium and mucous cavities.

The case can be considered to be a fortuitous experiment presenting the following features: the presence of an epithelium in a connective-tissue medium with a reduced circulation; mucoid impregnation of the whole structure; the development of a granulation tissue and of areas of necrosis in the wall of the appendix. The regular fibrillary structure shows, further, that some of the changes are due to traction or pressure by the intra-abdominal viscera, to intestinal peristalsis, and to traction by omental adhesions.

The role of the epithelium in heterotopic ossification is known from experiments. The experimental transplantation of mucous tissues into connective-tissue media constantly results in hypertrophy and proliferation of the mucous epithelium. Sometimes the epithelium may be responsible for the secretion of a phosphatase (Lucinesco and Cavalli, 1935, 1936; Severi, 1939). Zones of necrosis are the usual sites of calcification. The histiocytes of the granulation tissue represent the source of the osteoblasts. Physiological studies have long ago shown that mucous substances and mechanical irritants have an osteogenetic effect. But even now there is no explanation of how haemopoietic tissue develops in relation to areas of heterotopic ossification.

Perusal of the literature revealed reports of calcification in appendicular mucoceles (Henke and Lubarsch, 1929; Olanescu *et al.*, 1942) and of three cases of actual ossification (Henke and Lubarsch, 1929). Two of the latter were published by Nishii and Akimoto (1928)—appendicular carcinomata associated with mucoceles, where osseous tissue appeared only in areas free of the invading neoplasm. The third was published from the Virchow-Krankenhaus (680/1928)—a case of partial appendicular mucocele containing in its walls osseous foci showing a regular fibrillary structure.

Summary

A case of heterotopic ossification of an appendicular mucocele is reported. Ossification was of wide extent and was associated with the appearance of haemopoietic tissue. The mucocele had perforated and was accompanied by a gelatinous condition of the peritoneum. The various conditions required for the onset of ossification—structural, biochemical, and mechanical—were present and are discussed. The condition was not suspected clinically, being discovered only at operation.

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Medical Memoranda

An Unusual Case of Large-Bowel Obstruction

The following case of large-bowel obstruction after perineal excision of the rectum merits recording on account of its rarity. A search of the literature failed to reveal a similar case.

CASE REPORT

A woman aged 54 was admitted to the wards of Mr. R. A. Keane at the North Staffordshire Royal Infirmary on Nov. 27, 1946, complaining of pain in the centre of the abdomen for three days. She had vomited on the morning of admission. A perineal excision of the rectum had been performed nine years previously and the colostomy had functioned adequately till one year ago, when a plastic operation was carried out for stenosis of the opening. Thereafter the colostomy had again functioned normally until two days before admission. There had been no bowel action since. There was also difficulty in micturition.

On examination the temperature was 98° F. (36.7° C.), pulse 88. The tongue was furred. The abdomen was soft, and a large median swelling was visible in the suprapubic region which was tender and resonant on percussion. Normal bowel sounds were heard and there was no evidence of intestinal colic during examination. A left inguinal colostomy was present which looked quite normal, but it was impossible to introduce a finger into either opening.

Operation. Under general anaesthesia—nitrous oxide, oxygen, "trilene," and ether—a right paramedian subumbilical incision was made. A gangrenous mass of large bowel presented in the wound. This proved to be the blind efferent loop of large bowel leading from the colostomy. It was not fixed distally to the pelvic floor, but hung free in the peritoneal cavity as a pendulous sac. This sac was about 8 by 3 in. (20 by 7.5 cm.) in size, had undergone torsion at its base, and was bluish in colour. This blind end of colon was resected, leaving about a 1½-in. (3.75-cm.) stump at the colostomy. Free blood-stained fluid was mopped out of the pelvis, revealing the uterus firmly attached to the sacrum by adhesions on its whole posterior surface. Sulphathiazole, 5 g., was inserted in the peritoneal cavity and the abdomen was closed with a stab drain to the pelvis. The colostomy acted profusely before the patient left the table. Examination of the specimen showed a black gangrenous mucosa; the sac of bowel contained a heavy, putty-like faecal mass about the size of an orange and with a most offensive odour. Convalescence was uneventful, and the patient was discharged home on the sixteenth day.

COMMENT

This unusual complication of perineal excision of the rectum could occur only where the distal segment of bowel was hanging free and was not fixed in the usual manner to the reconstituted pelvic floor. This and the adherence of the uterus to the sacrum suggest either that an inadequate repair of the pelvic peritoneum had been carried out or that it had broken down post-operatively. The weighty faecal mass was presumably a precipitating factor.

My thanks are due to Mr. R. A. Keane for permission to publish this case.

KENNETH G. F. MACKENZIE, M.B., F.R.C.S.,
Resident Surgical Officer,
North Staffordshire Royal Infirmary.