tions of riboflavine and nicotinamide deficiency, there was no anaemia, and fat absorption was only slightly impaired.

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Medical Memorandum

Arthropathy due to Gastric Carcinoma

Certain gastro-intestinal diseases are recognized causes of arthropathy or of finger-clubbing; for instance, ulcerative colitis (Schlicke and Bargen, 1940), steatorrhoea (Bennett *et al.*, 1932), and amoebic or bacillary dysentery (Rappaport *et al.*, 1951). Arthropathy may also be the presenting symptom in carcinoma of the bronchus (Berg, 1949; Holmes *et al.*, 1950; Ellman, 1953), but carcinoma of the alimentary tract associated with arthropathy is very rare, although finger-clubbing has been described in cases of carcinoma of the small bowel and colon (Mendlowitz, 1942) and of the stomach (Willemse, 1922).

There is no report of gastric carcinoma causing arthropathy, and so a case with this association is worthy of record.

Case Report

A single woman aged 64 had had periodic blood-stained vomits for 10 months, and for five months she noticed that food seemed to "stick" at about mid-sternal level, though she was able to eat solids normally. She had lost a few pounds in weight. For four months she had had pains in her knees, ankles, wrists, and small joints of the fingers. The pains in the fingers were so bad that she could not make a fist or grip with either hand, and had been taking 8 or 10 aspirin tablets daily.

Examination showed her to be well nourished, with moderate pallor. There was grade 1 finger-clubbing. The proximal interphalangeal joints and metacarpophalangeal joints of both hands were swollen and tender, and movements were limited in these joints. The wrists, ankles, and knees were not swollen, but movements were painful, and the ankles were tender. The dorsum of each hand appeared swollen. There was no bony tenderness.

Investigations.—Hb, 7.7 g./100 ml. (52%); M.C.H.C., 26%; M.C.V., 71 cubic microns; P.C.V., 30%; W.B.C., 11,200/c.mm.; E.S.R., 29 mm. fall in one hour (Wintrobe). C-reactive protein, +++; Rose's test (D.A.T.), 1 in 8. Serum proteins, total 5.8 g./100 ml. (albumin, 3.6 g.). Barium-meal examination showed a new growth of the cardiac end of the stomach close to the oesophageal opening.

Mr. D. Ioan-Jones removed the carcinoma, a well-differentiated adenocarcinoma with one lymph node involved. The joint pains disappeared two days after operation, and the swollen joints became normal within three weeks. Five weeks after operation the C-reactive protein was +; Rose's test (D.A.T.), 1 in 2.

Discussion

Pathogenesis. — The mechanism of a carcinomatous arthropathy is not clear. Removal of the primary tumour is known to relieve arthropathy at once (Clagett *et al.*, 1952; Ellman, 1953), and simple section of the vagi, which is thought to abolish a "neural reflex," has also caused instant relief of arthropathy (Flavell, 1956). The vagi were cut at gastrectomy in the present case, and so the prompt relief of her joint pains could have been due either to interruption of a vagal reflex arc or to removal of the gastric carcinoma. Our patient showed no signs to support two other hypotheses—"dyspituitarism" (Fried, 1943), and "toxic absorption" (Wooler, 1948) due to delayed gastric emptying (Preble, 1898; Dennig, 1901), and so the pathogenesis of her arthropathy cannot be defined.

Incidence and Sex.—Arthropathy is said to occur in 50% of cases of pleural tumours (Clagett *et al.*, 1952), but it has not been reported in carcinoma of the stomach, although Willemse (1922) described two cases with marked finger-clubbing and solitary gastric cancers. Analysis of the case records of the last 200 patients with a proved gastric carcinoma at this hospital has shown that not one had joint pains, only four had finger-clubbing, and two of these four had chronic lung disease more than likely to cause such finger-clubbing. The patient described above is a female, whereas osteoarthropathy associated with intrathoracic neoplasms (Bamberger–Marie syndrome) is much commoner in males (Gall *et al.*, 1951; Shapiro, 1956).

Joints Involved.—The joints which are involved most often in an arthropathy associated with carcinoma are the ankles, knees, wrists, and interphalangeal joints. Only these joints were affected in our patient, and the distribution of her arthropathy could well have been mistaken for early rheumatoid arthritis. Craig (1937), Berg (1949), and Frank (1952), have all stressed that rheumatoid arthritis may be confused with arthropathy due to carcinoma, especially when the primary tumour itself causes no symptoms.

Investigations.—Many workers stress that the E.S.R. is very high in patients with arthropathy due to carcinoma; for instance, Hansen (1952) and Holmes *et al.* (1950) report values of 70–120 mm. fall in one hour. This is not always the case, however, as Pattison *et al.* (1951) report values of 23–32 mm., which accord with the E.S.R. of 29 mm. (Wintrobe) in our patient. It is interesting to note that in our patient the Rose test (D.A.T.) titre fell from 1:8 to 1:2 after operation, and as 1:16 is the lowest significant titre for rheumatoid arthritis (Kellgren, 1957), this test might be useful in differentiating from the arthropathy due to carcinoma. A fever, often reaching 101 to 102° F. (38.3 to 38.9° C.) (Fischl, 1950), and a normocytic anaemia (Temple and Jaspin, 1948) may occur in pulmonary osteoarthropathy, but our case had different features: a low-grade fever, to 99° F. (37.2° C.) only, and a hypochromic anaemia due to blood loss.

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