Polyarthritis associated with gastric carcinoma

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In a 68-year-old man who had polyarthritis associated with gastric carcinoma surgical resection of the tumour was accompanied by prompt resolution of the arthritic syndrome. In 11 years of follow-up the arthritis has remained in complete remission and there has been no recurrence of the carcinoma. An awareness that polyarthritis may be a presenting manifestation of an underlying carcinoma may, especially in an elderly person, lead to early recognition and treatment of the malignant disease.

Un homme âgé de 68 ans, porteur d'un épithélioma de l'estomac, présente une polyarthrite. Celle-ci disparaît rapidement après l'ablation chirurgicale de la tumeur. Suivi pendant 11 ans, le patient n'a montré ni arthropathie ni récidive de la tumeur. Il est bon de savoir que, chez le sujet âgé surtout, une polyarthrite peut constituer le symptôme d'appel d'un cancer et en suggérer le diagnostic et le traitement précoces.

A polyarthritis that is often clinically indistinguishable from rheumatoid arthritis is occasionally associated with various types of cancer and may be the presenting feature of the underlying malignant disease.[1-7] The diagnosis of the association of a polyarthritis with an underlying carcinoma depends on the prompt and sustained resolution of the arthritis when the carcinoma has been successfully treated. We describe the case of a 68-year-old man presenting with a rheumatoid-arthritis-like syndrome associated with a gastric carcinoma. This association has not been reported previously; none of the 18 cases of carcinoma-related arthritis reviewed by MacKenzie and Scherbel[5] involved a primary carcinoma of the stomach.

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Case report

A 68-year-old man was well until November 1970, when he presented at the outpatient clinic of our hospital with an influenza-like illness accompanied by persistent anorexia. The blood hemoglobin level was 141 g/L. Barium-meal roentgenography showed food residue in the stomach but no obstruction at the gastric outlet. The patient declined a repeat study.

Two or 3 months later, pain and stiffness, worse in the morning, developed in his knees, ankles, wrists, elbows and shoulders. He was admitted to hospital in May 1971 with a diagnosis of "early acute rheumatoid arthritis". He looked wasted, ill and flushed. Examination of the abdomen revealed no abnormal finding. He did have an acute polyarthritis involving the small joints of the hands, wrists, elbows, knees and ankles.

The blood hemoglobin level was 101 g/L, erythrocyte sedimentation rate (ESR) 103 mm/h, serum iron concentration 46 μg/dL (8.2 μmol/L), total iron-binding capacity 200 μg/dL (35.8 μmol/L), percentage iron saturation 23, serum folic acid level 3.1 ng/mL (7.0 nmol/L) and serum uric acid concentration 3.0 mg/dL (0.2 mmol/L). Serum protein electrophoresis showed a total protein concentration of 66.0 g/L (albumin 30.3%, α_1-globulin 7.6%, α_2-globulin 15.2%, β-globulin 15.2% and γ-globulin 31.8%). The γ-globulin showed a diffuse pattern. No abnormal bands were present. The latex fixation test for rheumatoid factor gave negative results on one occasion and weakly positive results 10 days later. The results of testing for antinuclear factor were negative. X-ray films of the patient's hands, elbows, shoulders, ankles and knees were normal.

His arthritis was treated with rest initially and then with acetylsalicylic acid (ASA), propoxyphene, physiotherapy and hydrotherapy. When seen in the outpatient clinic a month after his discharge from hospital he continued to complain of the arthritic pain. He had tenderness in the metacarpophalangeal joints of both hands, with some periarticular swelling and thickening, tenderness in the metatarsophalangeal joints of both feet, and restricted movement of the wrists, elbows and left shoulder. He attended the outpatient clinic at regular monthly intervals for more than a year and was treated continuously with ASA, propoxyphene, and a magnesium and aluminum hydroxide antacid. His appetite remained poor, and he had intermittent epigastric pain and tenderness. Barium-meal roentgenography in December 1971 showed gastroesophageal reflux but a normal stomach and duodenum.

Because of an acute flare-up of his arthritis and the increasingly bothersome abdominal pain, he was readmitted to hospital in October 1972. By then he had lost 16 kg since the onset of his illness. His abdomen was soft, and there was no tenderness or mass. The blood hemoglobin level was 78 g/L, serum iron concentration 25 μg/mL (4.5 μmol/L), total iron-binding capacity 300 μg/dL (53.7 μmol/L), percentage iron saturation 8, serum folic acid level 4.0 ng/mL (9.1 nmol/L), serum vitamin B_{12} concentration 590 pg/mL (435 pmol/L) and total serum protein concentration 67 g/L (albumin 33%).

Barium-meal roentgenography now demonstrated a large irregular, polypoid filling defect along the greater curve of the gastric antrum (Fig. 1). A pentagastrin gastric secretory test showed achlorhydria.

At laparotomy a fungating neoplasm was seen to involve the entire

distal half of the stomach, penetrating through the serosa and extending into the first centimetre of the duodenum. Scattered lymph nodes in the lesser omentum were enlarged. A distal 75% subtotal gastrectomy and a Billroth II antecolic gastrojejunostomy were performed. In the resected specimen an 8.0-cm-long ulceroinfiltrative lesion involved the entire mucosal surface of the antrum, extending to the distal line of resection and penetrating through the full thickness of the gastric wall to produce serosal nodules. Microscopically the tumour was a moderately to poorly differentiated tubular adenocarcinoma (Fig. 2) with perineural lymphatic invasion in the muscularis and in the serosa. Eight of 28 lymph nodes from the stomach's lesser curve and the omentum revealed metastatic disease.

Three days after the operation the patient's arthritis dramatically resolved. On discharge from hospital he weighed 49.5 kg. He has been assessed several times a year in the outpatient clinic for over 11 years since then. His polyarthritis has remained in complete remission, and there has been no evident recurrence of his gastric carcinoma. Six months postoperatively his hemoglobin level was 141 g/L. He rapidly regained weight and in November 1973 weighed 71.0 kg. A repeat latex fixation test for rheumatoid factor gave positive results, and the ESR was 25 mm/h. An upper gastrointestinal and small bowel barium study in March 1983 revealed no abnormality in the gastric remnant or the small bowel (Fig. 3).

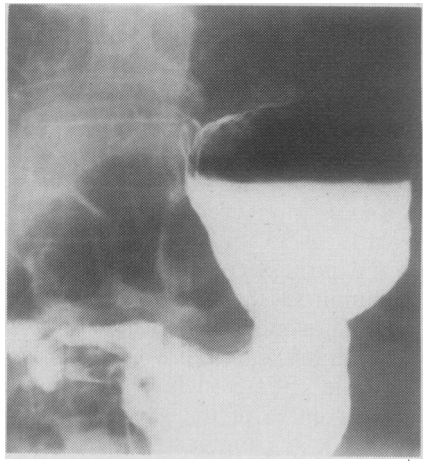

Fig. 1—Barium-meal x-ray film, showing large irregular, polypoid filling in gastric antrum.

Discussion

Metastatic lesions involving the small bones of the hands can cause an adjacent synovitis and may produce changes resembling rheumatoid arthritis,[8] and metastasis to the knee from a gastric carcinoma has been described.[9] Despite the unfavourable operative and pathological findings when our patient underwent resection of his gastric carcinoma, though, he has survived for over 11 years. His remarkably long survival rules out metastatic disease as a cause of his presenting arthritis.

Temporary remission of rheumatoid arthritis may be induced by any surgical procedure,[3] but the sustained remission of our patient's arthritis since the surgical resection of his gastric carcinoma excludes this explanation. He also had had no prior history of rheumatoid arthritis.

The causal relation between polyarthritis and gastric carcinoma is firmly established in this case by the lateness of the onset of rheumatoid-like arthritis in the patient's life and its close temporal association with the discovery of the gastric carcinoma, by the prompt resolution of the arthritic syndrome following surgical resection of the carcinoma[5,10] and by the absence of recurrence of either the polyarthritis or the malignant disease for at least 11 years.

Rheumatoid factor is infrequently found in patients with carcinoma-associated polyarthritis,[5,10,11] even though it has been detected in as many as 20% of patients with malignant disease alone.[12] Our patient had a weakly positive result of a rheumatoid factor test, but this persisted even after the apparently curative resection of his carcinoma. Low titres of rheumatoid factor may occur in up to 42% of persons over the age of 60 years, without any obvious cause.[13]

The mechanisms responsible for the association of polyarthritis with underlying malignant disease are

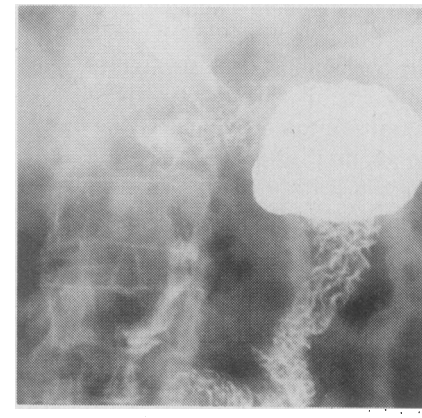

Fig. 3—Barum x-ray film 10.5 years after subtotal gastrectomy for antral carcinoma, showing normal gastric remnant and normal small bowel.

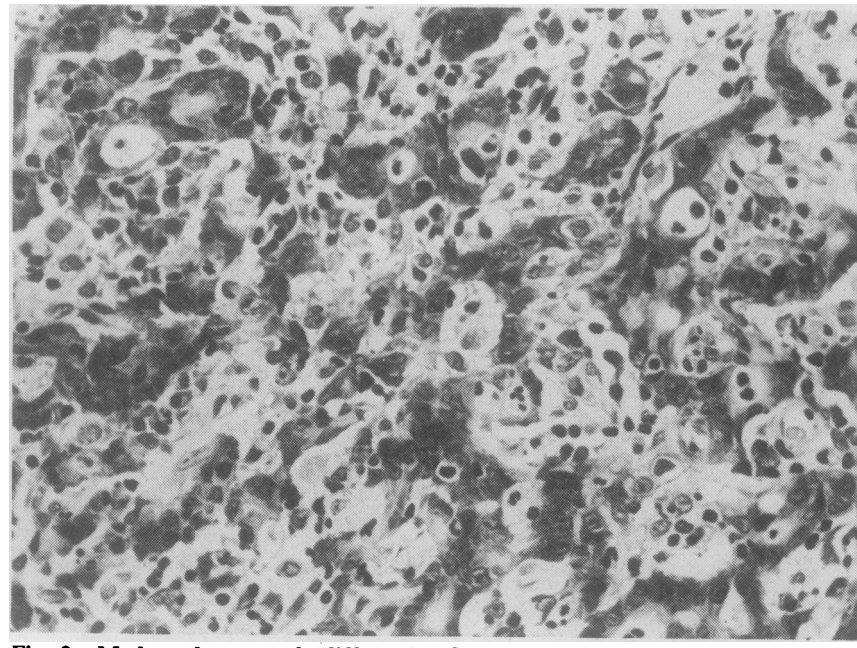

Fig. 2—Moderately to poorly differentiated tubular adenocarcinoma embedded in fibrous stroma, with inflammation (hematoxylin and eosin; ×150).

subjects of speculation. The possibilities include antigenic cross-reactivity between synovium and immunologically foreign neoplastic tissue or its products,[14] autoimmune phenomena in lymphocytes originating in hyperplastic lymph nodes draining tumour sites[15] and deposition in the synovium of circulating immune complexes.[16] It is also possible that prostaglandin E_2 has a role.[17]

The possibility of an associated carcinoma should be considered in any patient presenting with polyarthritis of late onset.[5] Such an awareness may lead to the early recognition and potential cure of an underlying malignant disease. Awareness of this association may also lead to early diagnosis of recurrence of the malignant disease, for relapse of the arthritic symptoms has been reported in half of the patients whose tumour recurs.[5]

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