Total gastrectomy has been advocated by Zollinger and Craig (1960a and b) in the treatment of these cases, whether or not a resectable pancreatic tumour is present. This procedure was not carried out in our case, because of the patient's poor general condition, the magnitude of the surgery already undertaken, and the presence of the great dilated veins in the fundal and hiatal regions. However, a radical subtotal gastrectomy was achieved. He has remained well for two years, having now a high platelet count but no evidence of polycythemia. The tumour being malignant, it is feared that further ulceration may occur, as metastases develop. It is proposed to estimate the night acid secretion, and to test for faecal occult blood at intervals, in an effort to anticipate further ulceration and its complications.

Summary
A case of the Zollinger-Ellison syndrome is described. A large non-beta-cell carcinoma arising in the tail of the pancreas apparently caused a 'back pressure' effect on the spleen. The resulting splenomegaly and venous engorgement made detection of the tumour difficult. The clinical problem was further complicated by an abnormal blood picture initially suggestive of polycythemia vera.

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FOLIC ACID DEFICIENCY IN HAEMOLYTIC ANAEMIA

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Folic acid deficiency with a megaloblastic bone marrow picture may develop in both the acquired and hereditary types of haemolytic anaemia (Chanarin, Dacie and Mollin, 1959). This is attributed to the demands of increased erythropoiesis, and it is particularly liable to occur when the dietary intake of folic acid is poor (MacIver and Went, 1960).

The purpose of the present paper is to describe a patient in whom an acute haemolytic episode rapidly produced folic acid deficiency, and after spontaneous recovery of the haemolysis the folic acid deficiency was almost completely corrected without treatment.

Case Report
A man, aged 34, was admitted to hospital in July 1962, complaining of breathlessness on exertion, lassitude and intermittent lower abdominal pain for two weeks. He had never had any previous illnesses and he had not taken any drugs. There was no family history of anaemia. His diet had consisted mainly of corned beef, sausages, fish cakes, potatoes and bread, and he ate green vegetables very rarely.

On examination he was pale and the spleen was palpable 4 cm. below the costal margin. His weight was gst. 2 lb.

Investigations: Hb. 7.8 g./100 ml., w.b.c. 1,450/ cu. mm. (polys 67%, lymphs 29%, monos 1%, eosins 2%, basophils 1%, platelets 160,000/cu. mm., reticulocytes 1%). Examination of the stained blood film showed moderate anisocytosis and poikilocytosis. Bone marrow examination showed erythroid hyperplasia, numerous megaloblasts and a decrease in the polymorphs, the differential count being: blast cells 4%, myelocytes and metamyelocytes 43%, polymorphs and band cells 8%, proerythroblasts 7%, normoblasts 11%, megaloblasts 24%. 54% of the megaloblasts were in the basophilic stage.

The serum vitamin B12 level was 140 μg./ml. (normal range 140-950 μg./ml.). In the histidine loading test (Kohn, Mollin and Rosenbach, 1961) there was a large amount of FIGLU in the urine. Schumm's test was positive. The direct Coombs' test was positive to an anti-human globulin dilution of 1/64. In the gamma-globulin neutralization test (Dacie, 1951) agglutination of the red cells was not inhibited by addition of gamma-globulin to the antiglobulin serum. Twenty-four autohemolysis was increased to 4.6%. No antibodies were demonstrated in the serum.

Virus complement fixation tests were negative three weeks and six weeks after admission. L.E. cells were
not found. The serum bilirubin was 0.7 mg./100 ml.,
the alkaline phosphatase 16 K.A. units/100 ml. and the
floculation tests were normal. In the xylose absorption
test, 5 g. xylose were excreted in the urine in five hours.
A three day test of fat excretion in the stools showed
an average of 2.8 g./24 hours.

Progress Nine days after admission the haemoglobin
had fallen to 7.2 g./100 ml., the white cells numbered 4,100
and the reticulocytes were 6%. The direct
Coombs' and Schumm's tests were now negative,
but serum haptoglobins were absent.

Eighteen days after admission, the haemoglobin was
9.5 g./100 ml., and the reticulocytes 12%. The bone
marrow contained fewer megaloblasts and a greater
number of polymorphs, the differential count being:
Blast cells 5%, myelocytes and metamyelocytes 18%,
polymorphs and band cells 33%, proerythroblasts 6%,
normoblasts 27%, megaloblasts 8%. There was still
a large amount of FIGLU in the urine.

Six weeks later the haemoglobin was 12.4 g./100 ml.,
and the reticulocytes 1%. Autohaemolysis was normal.
FIGLU was still present in the urine, but the amount
was much less than previously. The serum vitamin
B12 level had risen to 220 μg./ml. The spleen was not
palpable, and he had gained 12 lbs in weight.

In January 1963, the haemoglobin was 12.8 g./100 ml.
The stained blood film showed a normal appearance
of the red cells, but there were a large number of
polymorphs with hypersegmented nuclei, 35% having
5 lobes, 13% 6 lobes and 3% 7 lobes. A slight trace of
FIGLU was detected in the urine, and the serum
haptoglobins were absent.

He was then given 15 mg. folic acid by mouth daily
for four weeks. Following this treatment, the haemo-
globin rose to 14.8 g./100 ml., 14% of the polymorphs
had 5-lobed nuclei and none had 6- or 7-lobed nuclei.
There was no FIGLU in the urine. The Coombs,
and Schumm's tests remained negative, but haptog-
lobins were still absent in the serum.

Discussion

At the time of this patient's admission to hospital
the evidence for haemolysis was not particularly
obvious, there being no reticulocytosis, poly-
chromasia or raised serum bilirubin, and the initial
diagnostic problem was that of a young man with a
megagloblastic anaemia. Haemolysis was confirmed
by a positive Schumm's test, and the transiently
positive direct Coombs' test suggests an auto-
immune mechanism. Hasty treatment with folic
acid or vitamin B12 could have obscured the correct
interpretation of the situation, as the delayed
reticulocytosis might then have been attributed to
the treatment. This case, therefore, illustrates the
importance of looking for evidence of an associated
haemolytic anaemia in patients with megaloblastic
erythropoiesis.

The short duration of the symptoms, and the
absence of a reticulocytosis until several days after
admission suggest that the haemolysis had only
developed recently, and that this rapidly produced
severe folic acid deficiency. It has been shown that
in normal subjects fed on diets deficient in folic
acid, the stores of folic acid become sufficiently
depleted to give abnormal histidine loading tests in
four to six weeks (Knowles, Prankerd and Westall,
1961). It is not remarkable, therefore, that in this
patient, who never ate green vegetables, deficiency
of folic acid developed rapidly and that after
haemolysis ceased the folic acid deficiency was
largely corrected by a normal diet. However,
although the development of folic acid deficiency
in haemolytic anaemia has frequently been observed,
spontaneous recovery has not been reported
previously.

We wish to thank Dr. E. H. Moorhouse for his
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TWO CASES OF ACUTE IDIOPATHIC
CIRCUMSCRIBED GANGRENE

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The association of peripheral gangrene with diabetic
or atherosclerotic vascular disease is well known.
Other causes include the action of drugs such as
ergot, direct contact by chemicals, frostbite and
burns. Polyarteritis nodosa affecting the arterial
tree at any level down to the arterioles may cause
gangrene, as may occlusion of the venous blood
flow (venous gangrene). These characteristically
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