chronic bilateral renal papillary necrosis. Attention is drawn to the dangers of prolonged analgesic abuse.

Acknowledgments

We would like to thank Dr E. Bulmer for permission to record this case. We are also grateful to Dr D. B. Brewer for his advice and criticism, Mr S. A. Gaunt for the photography and Mrs J. Seabourne for secretarial assistance.

References

- ANNOTATION (1959) Phenacetin nephropathy. *Lancet*, **i**, 84.
- BOYD, D.H.A. (1964) The use and abuse of phenacetin. *Scot. med. J.* **9**, 423.
- DAWBORN, J.K., FAIRLEY, K.E., KINCAID-SMITH, P. & KING, W.K. (1966) The association of peptic ulceration, chronic renal disease and analgesic abuse. *Quart. J. Med.* **137**, 69.
- EDITORIAL (1964) Analgesic abuse and the kidney—a commentary. *J. Amer. med. Ass.* **190**, 238.
- JACOBS, L.A. & MORRIS, J.G. (1962) Renal papillary necrosis and the abuse of phenacetin. *Med. J. Aust.* **11**, 531.
- LEADING ARTICLE (1960) Renal risks of phenacetin. *Brit. med. J.* **i**, 714.
- LEADING ARTICLE (1965) Phenacetin and the kidney. *Brit. med. J.* **i**, 673.
- LINDENEG, O., FISCHER, S., PEDERSEN, J. & NISSEN, N.I. (1959) Necrosis of the renal papillae and prolonged abuse of phenacetin. *Acta med. scand.* **165**, 321.
- Monthly Index of Medical Specialities (1965) Vol. 7, No. 11.
- NELP, W.B., WAGNER, H.N. & REBA, R.C. (1964) Renal excretion of vitamin B₁₂ and its use in measurement of glomerular filtration rate in man. *J. Lab. clin. Med.* **63**, 480.
- OLAFSSON, O., GUDMUNDSSON, W.R. & BREKKAN, A. (1966) Migraine, gastritis and renal papillary necrosis. *Acta med. scand.* **179**, 121.
- REYNOLDS, T.B. & EDMONDSON, H.A. (1963) Chronic renal disease and heavy use of analgesics. *J. Amer. med. Ass.* **184**, 435.
- SANERKIN, N.G. & WEAVER, C.M. (1964) Chronic phenacetin nephropathy ('chronic interstitial nephritis') with papillary necrosis. *Brit. med. J.* **i**, 288.
- SPUHLER, O. & ZOLLINGER, H. (1953) Die chronisch interstielle Nephritis. *Z. klin. Med.* **151**, 1.

Mast cell disease

T. I. McBRIDE
M.B., M.R.C.P.
Registrar in Medicine

G. A. McDONALD
M.D., M.C.Path.
Consultant Haematologist

W. P. DUGUID
M.B., M.C.Path.
Consultant Pathologist

The Royal Infirmary, Glasgow

Introduction

In recent years much interest has been focused on the physiology and pathology of the mast cell. It is accepted that the mast cell features in a wide variety of disorders and mastocytosis has been proposed as a generic name for syndromes in which extensive mast cell involvement is present. Selye (1965) has collected and analysed the relevant literature on mast cells and this has been used as the main reference text in the preparation of this report. The patient described is of particular interest in that he had a syndrome which was first considered to be a non-specific mastocytosis, but in which several unusual features were discovered.

Case report

A 63-year-old male clerk was first seen at the Medical Out-Patient Department of Glasgow Royal Infirmary where he was discovered to be anaemic and to have hepatosplenomegaly. He was

consequently admitted for further investigation. The presenting complaints were dyspnoea, some chest tightness and nausea of only 6 weeks' duration. Detailed questioning revealed no other features of note in the past history—in particular there was no history of drug ingestion, episodic flushing or of any haemorrhagic tendency.

Physical examination revealed a well-developed man with no evidence of recent weight loss. The mucous membranes were pale and the liver and spleen were each palpable 2 finger breadths below the respective costal margins. Examination of the other systems revealed no abnormality. In particular no skin lesions were present.

Investigations

Hb, 6.6 g/100 ml; PCV, 22%; WBC, 2100/mm³—with a normal distribution in the differential count. Platelet count, 98,000/mm³; ESR, 35 mm in the 1st hour (Westergren). The blood film showed anisocytosis and poikilocytosis. The liver

FIG. 1. Marrow film. Low power view showing numerous mast cells. May-Grünwald-Giemsa stain, $\times 400$.

FIG. 2. Marrow film showing binucleate erythroblasts and mast cells. May-Grünwald-Giemsa stain, $\times 1280$.

FIG. 3. Marrow film. Toluidine Blue Stain confirming the presence of mast cells, $\times 400$.

function tests revealed no abnormality; electrolytes normal; blood urea, 54 mg/100 ml; blood group 'O' Rh +ve; Coomb's test negative. An M.S.U. submitted for bacteriological examination revealed no abnormality. An augmented histamine test revealed free acid in stomach. A radioactive vitamin B₁₂ absorption test (Schilling Test) showed normal absorption of vitamin B₁₂. The serum acid phosphatases were normal; serum iron, 125 μ g/100 ml; saturation, 35%; serum vitamin B₁₂, 170 pg/ml; serum folate, 17 pg; serum cholesterol, 145 mg/100 ml. Chest X-ray showed no abnormality, as did barium swallow and meal, bone survey and I.V.P. Gastric mucosal antigen test negative.

Sternal marrow examination revealed a cellular marrow in which the striking finding was the large number of mast cells spread diffusely through the marrow smears (Fig. 1). Many bizarre erythroblasts were also present—binucleate, trinucleate and quadrinucleate forms being noted (Fig. 2). The identity of the mast cells was confirmed with metachromatic staining (toluidine blue) (Fig. 3). The PAS stain was negative. Iliac crest aspiration showed a similar marrow picture.

A jejunal biopsy revealed an increased number of lymphocytes and plasma cells. The appearances were regarded as abnormal but not specific. In

view of the finding of the mast cells in the bone marrow the patient was tested for dermographism but this was not present. A skin biopsy showed an increase of mast cells around the dermo-capillaries but was not considered to be diagnostic of urticaria pigmentosa.

At this stage a diagnosis of possible primary mast cell disorder was postulated. Blood transfusion, 3 pints of packed red cells, was given and he was allowed home. The patient felt much better and he was kept under close surveillance as an out-patient over the next 2 months. By the end of this period the haemoglobin level had again fallen and he was readmitted. The blood picture again showed a pancytopenia and the pertinent clinical findings were as before. At this time detailed investigations to exclude any abnormality of the haemostatic mechanism were undertaken. These tests revealed no abnormality. He was again transfused with good effect and this was repeated on a subsequent admission. His condition deteriorated and on his final admission 8 months after the initial one he had become increasingly tired and lethargic. There was evidence of a right basal effusion. The liver and spleen were again easily palpable. The blood picture revealed: Hb, 5.6 g/100 ml; PCV, 20%; WBC, 1000/mm³; ESR, 120 mm in the 1st hour; platelets,

FIG. 4. Post-mortem marrow. Toluidine Blue Stain confirming the presence of numerous mast cells, $\times 1280$.

29,000/mm³. Electrophoresis of the serum proteins revealed a decrease in albumin but no abnormality of the globulin fractions.

In spite of further blood transfusion there was no improvement. The pleural effusion was aspirated and the fluid was found to be straw coloured. In this material no malignant cells, organisms or mast cells were found. Steroid therapy was started mainly because of the fall in the platelet count, but he slowly deteriorated and died 3 weeks later.

Necropsy

The principal findings were the presence of large haemorrhagic pleural effusions and ascites. The pleural surfaces of liver and diaphragm and the peritoneal surfaces of stomach and intestine were covered with numerous small white nodules. Histology showed granulomatous lesions with central necrosis, epithelioid cells and multinucleate giant cells. These lesions were morphologically consistent with tuberculosis. No obvious focus or primary lesion could be found in the lungs but enlarged mediastinal lymph nodes were found and these contained acid and alcohol fast bacilli. In addition there were two ulcers in the larynx and histology showed necrosis with thrombi in the vessels which contained numerous Gram-positive cocci. Similar lesions were found at the lung base. A pyaemic abscess was present in the adrenal and

septic infarcts in the kidney. The bone marrow showed a leuco-erythroblastic reaction and histology showed the presence of numerous mast cells and abnormal erythroid precursors (Fig. 4).

The pathological diagnosis was: (1) tuberculosis of serous cavities; (2) pyaemia; (3) pancytopenia; and (4) mastocytosis.

Discussion

The initial presentation of this case was of a man who had pancytopenia and hepatosplenomegaly. Bone marrow examination showed extensive infiltration with tissue mast cells. Although the post-mortem examination revealed the presence of tuberculosis, on review of the case it was considered that this was most probably a terminal feature associated with the administration of steroids.

In attempting to assess the relevance and part played by the mast cells, it is first of all accepted that mast cells may be present in the marrow in large numbers in the presence of severe anaemia. This could have been the cause in this case but an interesting feature here was the presence of unusual abnormal erythroblasts. Fadem (1951), in reporting seven cases in which there had been tissue mast cells in the marrow, remarked that three of them exhibited evidence of severe marrow depression and he further noted that abnormal

binucleated erythroblasts were present. The possibility therefore exists that there may be a specific haematological disorder characterized by marrow mastocytosis with abnormal erythroblasts which may lead to aplastic anaemia without having necessarily systemic mast cell involvement.

Summary

A case is presented in which pancytopenia was associated with marrow mastocytosis and abnormal erythroid precursors. At post-mortem tuberculosis of the serous cavities was found. The possible significance of these findings is discussed.

Acknowledgments

We wish to express our thanks and appreciation to Dr J. H. Wright under whose care the patient was investigated. The help and co-operation of Professor A. S. Douglas is also acknowledged, and we are very much indebted to Professor J. V. Dacie and Professor H. W. Fullerton for kindly reviewing the blood and marrow films.

References

- SELYE, H. (1965) *The Mast Cells*. Butterworths, Washington.
FADEM, R.S. (1951) Tissue mast cells in human bone marrow. *Blood*, **6**, 614.

Phaeochromocytoma as a cause of gastro-intestinal distension

A. BERNSTEIN*
B.A., M.B. (Dubl.)
Senior House Officer

ANN C. WRIGHT
M.B., Ch.B.
Medical Registrar

D. SPENCER†
M.B., Ch.B.
Registrar in Pathology

Hope Hospital, Salford 6

Too often the diagnosis of phaeochromocytoma is missed, because the possibility has not even been considered. This is largely due to its diverse clinical presentations. While paroxysmal hypertension with vasomotor instability, or sustained hypertension, may suggest the diagnosis, less familiar features may distort the picture. Those recorded include paroxysmal hypotension (Gjol, Dybkaer & Funder, 1957; Richmond, Frazer & Millar, 1961; Hamrin, 1962; Leather *et al.*, 1962), a typical hyperthyroidism (Davies, 1952), glycosuria, or even diabetes mellitus (Freedman *et al.*, 1958) and urinary retention (Barnet *et al.*, 1950; Baird & Cohen, 1954). There is a well-documented association with thyroid carcinoma (Williams, 1965) and with neurofibromatosis (Glushien, Mansuy & Littman, 1953). Phaeochromocytoma may cause sudden death from pulmonary oedema (Harrison &

Seward, 1954) and from cardiac arrhythmia (Durant & Soloff, 1962).

We report here a patient with bilateral phaeochromocytomata, presenting with gross abdominal distension and simulating acute intestinal obstruction. Although distension of the abdomen has been recorded in case reports of phaeochromocytoma, a direct connection between the two has not previously been stressed.

Case report

In August 1965, a 26-year-old housewife was admitted to Hope Hospital with a diagnosis of acute intestinal obstruction. She gave an 8-day history of progressive abdominal distension and colicky pains. There had been absolute constipation for 6 days, and persistent vomiting for 3 days. She gave a lifelong history of constipation, but there had been no previous episode of abdominal distension. Other complaints were exertional dyspnoea for 2 weeks, spontaneous bruising of her legs for a week, and thirst with polyuria for 3 days.

*At present: Medical Registrar, St Mary Abbott's Hospital, London, S.W.7.

†At present: Senior Registrar in Morbid Anatomy, Westminster Hospital (Vincent Square Laboratories, 124 Vauxhall Bridge Road, London, S.W.1).