(1955) has shown that the plasma cell is the main producer of antibody and the main vehicle for the transport of antibodies. If these observations are to be reconciled there must be some interrelationship between the small lymphocyte and the plasma cell; but so far no direct evidence for such a connexion has been obtained. A possible link may be the germinal centre cell. By using the technique of fluorescence microscopy it has been shown that the germinal centre cells contain γ -globulins (Ortega and Mellors, 1957), a feature they have in common with the P.H.A. cell (Elves *et al.*, 1963b; Bach and Hirschhorn, 1963). After antigenic stimulation the splenic Malpighian bodies contain cells which bear remarkable resemblances to the P.H.A. cell in their ultrastructure, having rather more endoplasmic reticulum than is usual in lymphoid cells (Movat and Fernando, 1962; Elves *et al.*, 1964), and there are cells intermediate in structure between these P.H.A.-like cells and the plasma cell. At present the question of the identity of the P.H.A. cell with the germinal centre cell is in doubt, but from the morphological and functional studies they appear to be very much alike.

The normal thoracic duct also contains small numbers of large lymphoid cells which resemble the P.H.A. cell in having more endoplasmic reticulum than is normal for lymphoid cells (Zucker-Franklin, 1963; Marchesi and Gowans, 1964). These cells have been labelled with tritiated thymidine and shown to develop characteristics like plasma cells in the intestinal wall when transfused into suitable hosts (Gowans and Knight, 1964).

The P.H.A. cell, which develops by transformation from the small lymphocyte, has therefore much in common with the germinal centre lymphoid cell and it is interesting to note that in some cases of hypogammaglobulinaemia there is a very poor follicular development in the lymphoid tissue with few germinal centre cells. It is also known that in all cases of hypogammaglobulinaemia, acquired or congenital, there is invariably a deficiency or total lack of plasma cells (Martin, 1962). Our work thus provides another piece of circumstantial evidence linking the small lymphocyte with the plasma-cell series.

SUMMARY

Leucocytes from the blood of patients with acquired or congenital agammaglobulinaemia have been cultured with phytohaemagglutinin; the degree of transformation of lymphocytes

to blast cells has been compared with that found in leucocyte cultures of normal subjects. In six cases of acquired agammaglobulinaemia associated with chronic lymphatic leukaemia and in one case of congenital agammaglobulinaemia a significant decrease in degree of transformation was found. This was also found to be true in cultures of cord blood. The lymphocytes of one patient with β -globulinaemia associated with chronic lymphatic leukaemia showed the normal degree of transformation. These findings are discussed and the evidence for a lymphocyte/plasma-cell relationship is reviewed in the light of them.

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Medical Memoranda

Strangulated Femoral Hernia in Child Aged 6 Years

Brit. med. J., 1964, **2**, 1052-1053

A girl aged 6 years (born 21 December 1956) was admitted to hospital on 21 February 1963. She had complained of colicky abdominal pain for 12 hours before admission and had vomited two or three times. She had a normal bowel action that morning. A swelling in the right groin had been noticed intermittently by the parents for a number of years, but they had never sought medical advice.

CASE HISTORY

On admission she appeared to be a healthy girl, with a normal pulse and blood-pressure. There was no abdominal distension or tenderness, and rectal examination was negative. Auscultation of the abdomen revealed obstructive bowel sounds. There was a swelling approximately 1 in. by 1 in. (2.5 by 2.5 cm.) in the right groin, below and lateral to the pubic spine. It was tense, tender, and non-translucent, with no cough impulse. The skin over it was a little reddened.

The swelling, which was explored shortly after admission through an overlying crease incision, proved to be a typical femoral hernia with a narrow neck in the femoral ring. The sac was incised at the fundus. The contents consisted of a little blood-stained fluid and a knuckle of very dark, congested small bowel. The constriction ring at the neck of the sac was so tight that it had to be enlarged by incising Gimbernat's ligament. After this the colour of the bowel

returned to normal except for a small gangrenous patch which was buried by oversewing. The bowel was returned to the abdominal cavity without difficulty and the femoral sac excised. The femoral ring was so large that closure by insertion of two stitches between the medial end of the inguinal ligament and the pectineal fascia was necessary. The wound was then closed. The post-operative course was uneventful, and the child was discharged from hospital eight days later.

COMMENT

Femoral hernia in infancy and childhood is uncommon and has received only brief mention in British and American textbooks of paediatric surgery. Mestel *et al.* (1959) reviewed the literature extensively and assessed the incidence of femoral to inguinal hernia at 4.5:1,000. Strangulation occurring as a complication is extremely rare. Gray and Skandalakis (1962) describe a strangulated femoral hernia containing small intestine in a 40-day-old girl and could find only eight other cases under the age of 10 recorded in the literature. Underhill (1954) also recorded a case of strangulated femoral hernia containing small intestine in a boy aged 5 weeks, and Temple (1952) reported another case, a boy of 3½ years, in which the sac contained omentum.

It is generally accepted that femoral hernia in adults is acquired and that no congenital sac is present (*Lancet*, 1962).

McVay and Savage (1961) failed to find any evidence of a congenital femoral hernial sac in a large series of necropsies in infants. However, it appears that very rarely a congenital sac may be present, as was almost certainly the case in Underhill's 5-week-old baby.

Since femoral hernia is so rare in children there is a risk that if strangulation occurs the condition may be misdiagnosed and operation delayed. The most likely source of error is inguinal adenitis, which is common in children. Other conditions include strangulated inguinal hernia, acute hydrocele, and torsion of an ectopic testis or ovary.

My thanks are due to Mr. W. R. S. Hutchinson, under whose care this child was admitted, for permission to publish details of this case.

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Renal Ischaemia Due to Thrombosis of Renal Artery Resulting from Metastases from Primary Carcinoma of Bronchus

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Hypertension due to obstructive lesions of the renal artery is now a well-established condition (Poutasse, 1961). The commonest cause of the occlusion in a patient over 40 years old is an atheromatous plaque with or without thrombosis (McCormack, 1961). The next most frequent is an idiopathic thrombosis. Other causes of thrombosis such as ascending thrombosis of the aorta, trauma (De Camp and Birchall, 1958), and specific arteritis (Danaraj *et al.*, 1963) are described.

We report a case of hypertension resulting from thrombotic occlusion of the renal artery due to compression by a malignant lymph node, a metastasis from a primary carcinoma of the bronchus, a hitherto unrecorded combination.

CASE REPORT

A 62-year-old labourer was admitted to hospital on 24 July 1963 complaining of dyspnoea for two weeks and throbbing headaches and dizziness for four weeks. On examination he looked frail and rather pale. The blood-pressure was 250/170 mm. Hg, with clinical and radiological evidence of left ventricular enlargement. There was a grade four hypertensive retinopathy with marked papilloedema. The remainder of the clinical examination revealed no abnormality.

The haemoglobin was 12.4 g./100 ml., with a normal white-cell count. The blood urea was 32 mg./100 ml., with normal serum electrolytes. No albuminuria was present and a screening test for urinary catecholamines was negative.

He was placed on phenobarbitone and theobromine, but no appreciable reduction in blood-pressure was obtained. After a trial period of two weeks guanethidine 10 mg. daily was substituted, and supplemented a week later with chlorthalidone 50 mg. daily. The

blood-pressure settled to within the region of 200/110 mm. Hg on 35 mg. of guanethidine daily.

An intravenous pyelogram showed normal function of the left kidney, but the right kidney failed to excrete the dye and appeared considerably contracted. A translumbar aortogram showed complete occlusion of the right renal artery.

The non-functioning right kidney was explored on 18 September and a greyish white vascular mass was found, totally replacing the right adrenal gland and adherent to the upper pole of the contracted kidney. There were two enlarged lymph nodes adjacent to the wall of the right renal artery near the hilum. The entire mass and the right kidney were removed.

On examination the right kidney was found to be 7.5 cm. in length and weighed 60 g. There was an overall reduction in size with no surface scarring. A pale thrombus the size of a pencil-lead in the renal artery measured 2 cm. in length and was attached to the intima of the vessel at its distal end (Fig. 1). Attached to the upper part of the artery at this level was an enlarged lymph node measuring 1 cm. across with a similarly enlarged node lying between the artery and the upper surface of the pelvis of the kidney (Fig. 2). There

FIG. 1.—Renal artery opened to show thrombus within it, and adjacent malignant lymph nodes.