LEUCOPENIA IN INFECTIOUS MONONUCLEOSIS

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Introduction

In infectious mononucleosis leucopenia is found in about 40 per cent of cases when the blood is examined between the fourth and tenth day (Gardner and Paul 1947). The three cases reported here show initial leucopenia with the later emergence of abnormal mononuclear cells in the peripheral blood.

Case Reports

Case No. 1

A staff sergeant aged 31 years was admitted on 27 April, 1963 with a three day history of fever and enlarged neck glands. His past and family history were not contributory. On admission he had a temperature of 101°F with bilateral cervical and axillary lymphadenopathy. Examination of the throat revealed nothing abnormal. The spleen was not palpable on admission but became so after two days.

Investigations on admission :- Hb. 15.6G per cent (107 per cent) ; sedimentation rate 1 cm/hr; total white count 7,400/c.mm; polymorphonuclear leucoytes 67 per cent, lymphocytes 30 per cent, monocytes 2 per cent, eosinophils 1 per cent. Paul Bunnell test negative; urinalysis normal; chest X-ray normal; Widal, Brucella agglutinations and Toxoplasma Dye test were not diagnostic.

Progress :- During the first week in hospital he developed a leucopenia with a total white count on 29 April (two days after admission) of 1,400/c.mm. (66 per cent polymorphs and 34 per cent lymphocytes). No abnormal mononuclear cells were seen in the peripheral blood at this time and his Paul Bunnell was negative. Three days later his peripheral blood showed a total white cell count of 7,000/c.mm with 34 per cent polymorphs, 16 per cent lymphocytes, 8 per cent monocytes and 42 per cent abnormal mononuclear cells; his Paul Bunnell test was then strongly positive. From this time his total white count remained within the normal range, serial examination of the peripheral blood showing a gradual fall in the percentage of abnormal cells. At the end of the first week he was found to have abnormal liver function tests, the serum bilirubin rising to a maximum of 3.3 mgm on 7 May. His fever and glands settled slowly, his liver function tests returned to normal, and he was discharged from hospital on 23 May.

Case No. 2

A private aged 27 years was admitted on 19 April, 1963 with a two day illness consisting of fever, headache and pains in the limbs. On admission he had a temperature of 104°F with herpes labialis, a palpable spleen and a few slightly enlarged glands in his neck but none elsewhere. His past history was not significant and he had not served outside England and N. Ireland.

Investigations on admission :- Hb 15.4G per cent (105 per cent); sedimentation rate 6 mm./hr; total white cell count 2,000/c,mm; polymorphonuclear leucoytes 50 per cent, lymphocytes 48 per cent, monocytes 2 per cent; no malaria parasites were seen in the peripheral blood; Paul Bunnel test negative; Widal and Brucella agglutinations were not diagnostic; urinalysis normal.

Progress :- Three days after admission he developed a diffuse erythematous rash that was consistent with a diagnosis of infectious mononucleosis, but, at this time, his peripheral blood showed a total white count of 900 cells/c.mm (68 per cent polymorphs, 27 per cent lymphocytes and 5 per cent monocytes). Concurrently with the rash he became jaundiced (Serum transaminases:- SGOT 117 units, SGPT 118 units). The white cell count was followed daily and showed on 23 April total value of 1,200 cells/c.mm with no abnormal cells; 25 April 3,400 total with an occasional abnormal mononuclear cell; 26 April 4,400 with 16 per cent abnormal mononuclear cells; 27 April the total white count was 5,400 with a normal differential and no abnormal cells. Paul Bunnell test remained negative. He made a good recovery and was discharged from hospital on 20 May.

Case No. 3

A WRAC private aged 19 years was admitted on 14 March, 1963 with a twenty-four hour history of headache and fever. Her past history was not significant and she had never served overseas. On admission she had a temperature of 102°F and a palpable spleen. There was no glandular enlargement on admission but two days later there were palpable cervical and axillary glands.

Investigations on admission :- Hb 13.2G per cent (90 per cent); sedimentation rate 14 mm/hr; total white cell count 4,000; polymorphonuclear leucoytes 63 per cent, lymphocytes 32 per cent, monocytes 4 per cent, eosinophils 1 per cent; Paul Bunnell test negative; Widal and Brucella agglutinations, Toxoplasma Dye test and Complement Fixation tests were not diagnostic; chest X-ray normal; urinalysis normal.

Progress :- Pyrexia and headache continued, therefore two days after admission lumbar puncture was performed; this provided clear fluid under normal pressure containing 8 polymorphs/c.mm, 35 mgm per cent protein and 86 mgm per cent sugar. Other findings at this stage were platelets 300,000/c.mm; bilirubin 0.5 mgm per cent; SGOT 40 units; SGPT 23 units; LE test negative. Further Paul Bunnell tests were negative and four days after admission the white count had fallen to 2,000 cells!c.mm with 3 per cent abnormal mononuclear cells. One week later the total count was 1,900/c.mm with 20 per cent abnormal mononuclear cells. At this time her platelet count was 120,000/c.mm but four days later was recorded as 370,000/c.mm. Liver function tests on 22 March were, Serum Bilirubin 0.3 mgm per cent; SGOT 107 units; SGPT 360 units; bone marrow examination on 27 March revealed nothing abnormal. The total white count rose gradually to normal levels, and the number of abnormal mononuclear cells slowly fell. The Paul Bunnell test remained negative and she was discharged from hospital on 8 May.

Discussion

It has become customary to accept the characteristic peripheral blood film of glandular fever as one of increased leucocyte count associated with a large number of

so called "mononuclear cells" (Britton 1963). That this is not always so is shown in a number of reports of leucopenia occurring in this condition (Read and Helwig 1945, Thurm and Bassen 1955, and Knight and Esslemont 1960). In a study of 210 patients Stevens et al (1951) examined the total number of leucocytes and the percentage of lymphocytes in relation to the duration of disease, but no consistent pattern of rise and fall was detected. However, Leibowitz (1953) comments on the more usual pattern of leucopenia early and moderate leucocytosis in the second and third weeks. Under present medical arrangements in the Service it is usual to see these cases early and under these conditions a leucopenia may be the presenting blood picture.

Each of our patients showed impairment of liver function as shown by raised serum bilirubin or serum transaminase. This is in accordance with the findings of Dunnet (1963) who found serum bilirubin raised in 33 per cent and SGOT raised in 73 per cent of a series of 80 patients.

Summary

Three cases of leucopenia in infectious mononucleosis are described; it is suggested that this is a common finding in patients seen early in the disease.

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Royal Society of Tropical Medicine and Hygiene

PROFESSOR G. M. MacDonald, C.M.G., M.D., F.R.C.P., D.T.M., D.P.H., has been elected President of the Society in succession to Dr. Charles Willcocks. He is Honorary Consultant to the Army in malariology and served as a consultant in the Middle East in the Second World War.

Royal Society of Health

Brigadier Sir John Boyd, O.B.E., F.R.S., M.D., F.R.C.P., LL.D., D.P.H., D.T.M. & H., has been elected an Honorary Fellow of the Royal Society of Health.