- HYUN, B.H., VARGA, C.F. & RUBIN, R.J. (1972) Spontaneous and pathological rupture of the spleen. *Archives of Surgery*, Chicago, **104**, 652.
- MILLER, J. (1961) A case of spontaneous rupture of the spleen. *British Medical Journal*, **2**, 490.
- ORLOFF, M.J. & PESKIN, G.W. (1958) Spontaneous rupture of the spleen a surgical enigma. *International Abstracts of Surgery*, **1**, 1.
- PHILLIPS, G.M. (1972) False positive monospot test results in rubella. *Journal of the American Medical Association*, **222**, 585.
- RAWSTHORNE, G.B., COLE, T.P. & KYLE, J. (1970) Spontaneous rupture of the spleen in infectious mononucleosis. *British Journal of Surgery*, **57**, 396.
- REGISTRAR GENERAL (1974) Statistical review of England and Wales for 1972. Medical. Part I, London, H.M. Stationery Office.
- REISMAN, D.D. & LOGAN, D.J. (1968) Rupture of the spleen secondary to renal sepsis. *Journal of Urology*, **98**, 426.
- SADOFF, L. & GOLDSMITH, O. (1971) False positive infectious mononucleosis spot test in pancreatic carcinoma. *Journal of the American Medical Association*, **218**, 1297.
- SAKULSKY, S.B., WALLACE, R.B., SILVERSTEIN, M.N. & DOCKERTY, M.B. (1967) Ruptured spleen in infectious mononucleosis. *Archives of Surgery*, Chicago, **94**, 349.
- SELTZER, M.H. & QUARANTILLO, E.P. (1973) Spontaneous splenic rupture in an anticoagulated patient. *Journal of the Medical Society of New Jersey*, **70**, 397.
- SHAPIRO, C.M. & HORWITZ, H. (1959) Infectious mononucleosis in the aged. *Annals of Internal Medicine*, **51**, 1092.
- SOYER, M.T., MERK, M.E. & ALDRETE, J.S. (1976) Spontaneous rupture of the spleen, an unusual complication of anticoagulant therapy. *Archives of Surgery*, Chicago, **111**, 610.
- YURKO, A.A., WINEGARNER, F.G. & KINSEY, D.L. (1965) The danger of the ruptured spleen in infectious mononucleosis. *Ohio State Medical Journal*, **61**, 995.

Postgraduate Medical Journal (January 1978) **54**, 55–57.

Chronic active hepatitis, haemolytic anaemia and *Listeria monocytogenes* bacteraemia

R. G. CHADWICK
B.M., M.R.C.P.

J. M. GRAHAM
M.B., Dip.Bact., F.R.C.Path.

Southampton General Hospital, Southampton

Summary

The association of chronic active hepatitis with haemolytic anaemia is well known. Both conditions may respond to steroid therapy which, in common with other causes of suppressed T-lymphocyte function, predispose to many types of infection. A case is described in which transient *Listeria monocytogenes* bacteraemia occurred and the patient recovered without antimicrobial therapy.

History

A 53-year-old woman was admitted to hospital with 3 weeks' history of jaundice, dark urine and pale faeces. She had been breathless on exertion, and tired for 1 week.

On examination she was pale, but deeply jaundiced. A firm, smooth, non-tender liver was palpable 10 cm below the costal margin. There was no splenomegaly and no skin stigmata of chronic liver disease.

Correspondence: Department of Medicine, Royal Free Hospital, Pond Street, London, NW3 2QG.

Investigations

Haemoglobin 6.7 g/dl, PCV 0.20, MCHC 33 g/dl, ESR 150 mm in the first hour; reticulocytes 16%; direct Coombs' test negative; haptoglobin absent; Schumm's test weakly positive; sucrose water test negative; red cell life by ⁵¹Cr labelling 15 days; stool blood loss normal; total bilirubin 200 μmol/l (11.7 mg/dl); direct van den Bergh 149 μmol/l (8.7 mg/dl); aspartate transaminase 357 u./l (normal value 5–42 u./l); alkaline phosphatase K.Au./dl; albumin 28 g/l (2.8 g/dl); globulin 55 g/l (5.5 g/dl); IgG 35 g/l (3.5 g/dl); serum caeruloplasmin 6.8 mmol/l (43 mg/dl); antinuclear factor 1 : 20 (speckled); smooth muscle antibody titre strongly positive; mitochondrial antibody absent; liver biopsy showed chronic aggressive hepatitis.

Management

The patient was treated with prednisolone 30 mg reducing to 20 mg daily. The haemolytic anaemia responded completely and the serum proteins and liver function tests returned to normal.

Seventeen months later the prednisolone was stopped. After a further 8 weeks she was re-admitted with a 10-day history of worsening obstructive jaundice, anorexia and night sweats.

On examination she had deep jaundice and hepatomegaly as before, and was also febrile (temp. 38.5°C).

Further investigations

Haemoglobin 9.9 g/dl; reticulocytes 3.3%; direct Coombs' test weakly positive; weak titre of non-specific cold agglutinin; haptoglobin absent, Schumm's test negative; bilirubin 239 $\mu\text{mol/l}$ (14 mg/dl); aspartate transaminase >306 u./l; alkaline phosphatase 21 KA.U./dl; albumin 25 g/l (2.5 g/dl); globulin greater than 75 /gl (7.5 g/dl).

A further liver biopsy 40 days after admission showed established cirrhosis. Haematological indices, serum, proteins, bilirubin, aspartate transaminase and alkaline phosphatase were seen to be normal on the sixtieth day.

Progress

The low grade pyrexia persisted until prednisolone therapy was started on the fourth day with doses up to 60 mg daily. On the tenth and eleventh day, malaise and headaches were associated with a recurrence of pyrexia of 38.8°C. Blood cultures produced a growth of *Listeria monocytogenes* type 1/2 sensitive to ampicillin, erythromycin and streptomycin, resistant to penicillin. By the time the organism has been isolated the fever had settled without antibiotics, and repeat blood cultures were negative.

Discussion

The association of chronic active hepatitis and haemolytic anaemia is well recognized (Dacie, 1967).

L. monocytogenes is found widespread in nature with isolations described worldwide. Asymptomatic carriers are to be found particularly among workers in silage and meat production industries. The organism is found in the faeces and, less commonly, the nose and throat. There is no definite evidence of zoonotic transmission and *L. monocytogenes* is able to survive and multiply in soil (Seeliger, 1972).

L. monocytogenes has been described as the causative organism in genital infection, recurrent abortion, gastroenteritis and particularly meningo-encephalitis. It is mainly a pathogen of neonates and the elderly, and an opportunist pathogen in those debilitated by malignant disease or cirrhosis (Ales Reinlein, Florez Alia and Soriano Garcia, 1974).

The propensity of patients with liver disease to develop bacteraemia, especially with enteric organisms is well known (Martin *et al.*, 1956; Conn, 1964).

The cirrhotic liver has a reduced ability to trap foreign antigens. This may be due to the shunting of portal blood, or to Kupffer cell insufficiency (Thomas, McSween and White, 1973).

T-lymphocytes are involved in the resistance to infection with *L. monocytogenes* and it is known that suppression of T-lymphocyte function by steroids, azathioprine or antilymphocytic serum predisposes particularly to this infection (Gray and Killinger, 1966). Renal allograft patients are especially at risk of pontomedullary infections (Nirmul *et al.*, 1971; Mahony *et al.*, 1974) and bacterial endocarditis (Leonard, Raji and Shapiro, 1973) are serious manifestations.

Results of antibiotic therapy are variable. Ampicillin is often effective treatment for *L. monocytogenes* infection (Nirmul *et al.*, 1971; McNair, White and Graham, 1968). Penicillin may be a suitable alternative, and both act synergistically with gentamicin or streptomycin (Moellering *et al.*, 1972). Patients with no other underlying disease have better prognoses than do those already debilitated by other conditions (Ales Reinlein *et al.*, 1974; Medoff, Kunz and Weinberg, 1971).

This patient would appear to be exceptional in having recovered spontaneously from *L. monocytogenes* bacteraemia.

Acknowledgment

We wish to thank Dr J. Bamforth for his permission to publish this account of his patient; Dr J. E. Middleton, Chemical Pathologist, for the biochemical data, and Dr Agnes Macara of the Standards Laboratory, Central Public Health Laboratory, Colindale, for typing the organism.

References

- ALES REINLEIN, J.M., FLOREZ ALIA, C. & SORIANO GARCIA, F. (1974) Infección por *Listeria monocytogenes*. *Revista Clínica Española*, Madrid, **133**, 205.
- CONN, H.O. (1964) Spontaneous peritonitis and bacteremia in Laennec's cirrhosis caused by enteric organisms. *Annals of Internal Medicine*, **60**, 568.
- DACIE, J.V. (1967) *The Haemolytic Anaemias*, Part III, 2nd edn, p. 288. Churchill Livingstone, London.
- GRAY, M.L. & KILLINGER, A.H. (1966) *Listeria monocytogenes* and listeric infections. *Bacteriological Review*, **30**, 309.
- LEONARD, A. RAJI & SHAPIRO, F.L. (1973) Bacterial endocarditis in regularly dialyzed patients. *Kidney International*, **4**, 407.
- MACNAIR, D.R., WHITE, J.E. & GRAHAM, J.M. (1968) Ampicillin in the treatment of *Listeria monocytogenes* meningitis. *Lancet*, **i**, 16.
- MAHONY, J.F., TAMBYAH, J.A., DALTON, V.C. & WOLFENDEN, W.H. (1974) Pontomedullary listeriosis in renal allograft recipient. *British Medical Journal*, **2**, 705.
- MARTIN, W.J., SPITTEL, J.A., MORLOCK, C.G. & BAGGENSTOSS, A.H. (1956) Severe liver disease complicated by bacteremia due to Gram-negative bacilli. *Archives of Internal Medicine*, **98**, 8.
- MEDOFF, G., KUNZ, L.J. & WEINBERG, A.N. (1971) Listeriosis in humans; an evaluation. *Journal of Infectious Diseases*, **123**, 247.

- MOELLERING, R.C., MEDOEF, G., LEECH, I., WENNERSTEN, C. & KUNZ, L.J. (1972) Antibiotic synergism against *Listeria monocytogenes*. *Antimicrobial Agents and Chemotherapy*, **1**, 30.
- NIRMUL, G., GLABMAN, S., HAEMOV, M., LEITER, E. & BIRROWS, L. (1971) *Listeria monocytogenes* meningitis during immunosuppression. *New England Journal of Medicine*, **285**, 1323.
- SEELIGER, H.P.R. (1972) Proceedings: New outlook on the epidemiology and epizootology of listeriosis. *Acta microbiologica academicae scientiarum hungaricae*. Budapest, **19**, 273.
- THOMAS, H.C., MCSWEEN, R.N.M. & WHITE, R.G. (1973) Role of the liver in controlling immunogenicity of commensal bacteria in the gut. *Lancet*, **i**, 1288.