to the action of these exotoxins. Such a classification may also provide a practical basis for the administration of specific antimicrobial chemotherapy, convalescent gamma globulin, and future development of an effective antitoxin. Greater awareness and better management of toxin mediated haemolytic uraemic syndrome should ultimately improve its prognosis.

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References

[1] Drummond KN. Haemolytic uraemic syndrome—then and now. *N Engl J Med* 1985;**312**:116–18.
[2] Karmali MA, Steele BT, Petric M, Lim C. Sporadic cases of haemolytic-uraemic syndrome associated with faecal cytotoxin and cytotoxin-producing Escherichia coli in stools. *Lancet* 1983;i:619–20.
[3] O'Brien AD, Lively TA, Chang TW, Gorbach SL. Purification of Shigella dysenteriae 1 (Shiga)-like toxin from Escherichia coli 0157:H7 strain associated with haemorrhagic colitis. *Lancet* 1983;i:573.
[4] Johnson WM, Lior H. Toxins produced by Campylobacter jejuni and Campylobacter coli. *Lancet* 1984;i:229–30.
[5] Alon U, Alder SP, Chan JCM. Haemolytic uraemic syndrome associated with Streptococcus pneumoniae. *Am J Dis Child* 1984;**138**:496–9.
[6] Rose PE, Armour JA, Williams CE, Hill FGH. Verotoxin and neuraminidase induced platelet aggregating activity in plasma: their possible role in the pathogenesis of the haemolytic uraemic syndrome. *J Clin Pathol* 1985; **38**:438–41.
[7] Rose PE, Enayat SM, Sunderland R, Short PE, Williams CE, Hill FGH. Abnormalities of factor VIII related protein multimers in the haemolytic uraemic syndrome. *Arch Dis Child* 1984;**59**:1135–40.
[8] Gully PR. Haemolytic uraemic syndrome: epidemiology and report of an outbreak. *Journal of the Royal Society of Health* 1984; **104**:214–7.

Do parathyroid and adrenal autoantibodies coexist?

The aetiology of idiopathic hypoparathyroidism remains unknown, although an autoimmune pathogenesis seems probable in some cases. Controversy exists over the prevalence of parathyroid autoantibodies in idiopathic hypoparathyroidism and in association with other autoimmune diseases. Blizzard *et al*[1] found parathyroid specific antibodies in the sera of 46 of 74 (>38%) of patients with idiopathic hypoparathyroidism, 25 of 93 (>26%) of patients with idiopathic Addison's disease, and in 6 of 245 (>6%) of controls, using an indirect immunofluorescence technique. These figures have remained unconfirmed.

Irvine and Scarth[2] studied sera from nine patients with idiopathic hypoparathyroidism and described an antibody to parathyroid oxyphil cells in one of these patients. Doniach and Bottazzo[3] subsequently expressed the opinion that the oxyphil cell reactivity could be attributed to human specific mitochondrial antibodies. They further reported screening "normal, hyperplastic and adenomatous parathyroid glands with several hundred polyendocrine sera and hypoparathyroid cases." They identified only three sera that reacted specifically with parathyroid chief cells; one of which was obtained from a patient with idiopathic hypoparathyroidism.

We wished to obtain parathyroid autoantibody positive sera for the purpose of antigen characterisation. In view of the high incidence of parathyroid autoantibodies found in idiopathic Addison's disease, in Blizzard's series, and the known rarity of adrenal autoantibodies in the normal population (<0·1%)[3] we determined to obtain adrenal autoantibody positive sera for parathyroid autoantibody assessment.

Methods

Twenty six adrenal autoantibody positive sera were obtained from six British immunology centres. Normal control sera were obtained from healthy volunteers. We also obtained sera from two patients with idiopathic hypoparathyroidism. All sera were stored at −20°C until assay.

A standard indirect immunofluorescence technique was used to determine the presence of autoantibodies.[4] Parathyroid autoantibodies were assessed on unfixed 5 μm cryostat sections of normal human parathyroid gland obtained at necropsy. All sera were applied to these sections, both undiluted and at a 1/5 (v/v) dilution. Five sera were additionally assessed on cryostat sections of a surgically resected parathyroid adenoma. Adrenal autoantibodies were confirmed and titrated on cryostat sections of normal human adrenal gland obtained at necropsy. Fluorescein isothiocyanate (FITC) conjugated sheep antihuman immunoglobulins G, A, and M (heavy and light chain) were applied as second antibody, and fluorescence was assessed using a fluorescence microscope. Negative and positive controls were included in each batch of sections tested. Negative controls comprised replacement of test serum by buffer, replacement of test serum by normal human control serum, and replacement of both the test serum and FITC conjugate by buffer. A known autoantibody positive serum is normally titrated simultaneously with each batch of sections as a positive control. In the absence of a known parathyroid autoantibody positive serum an antinuclear antibody positive serum was substituted for this control on parathyroid sections. This was titrated and gave a satisfactory assessment of the performance of the conjugate.

Results

None of the 26 adrenal autoantibody positive sera and neither of the sera from the two patients with idiopathic hypoparathyroidism showed specific reaction with normal human parathyroid tissue. Similarly, the five adrenal autoantibody positive sera, which had been additionally assessed on a human parathyroid adenoma, failed to show any evidence of the presence of parathyroid autoantibodies. The Table shows the results of titration of the adrenal autoantibody positive samples by indirect immunofluorescence.

Discussion

If 26% of patients with idiopathic Addison's disease had parathyroid autoantibodies we would have expected to detect several patients with coexisting parathyroid and adrenal autoantibodies in our series. We found none, however, which suggests that such antibodies are rare. It may be argued that the differences between our findings and those of Blizzard[1] could be based on patient selection. It is likely, however, that many of our patients had adrenal disease. This opinion is supported by two factors. First, adrenal antibodies are rare in the general population (<0·1%) and when present are often associated with the disease. Second, many adrenal antibody positive patients who are

Table

Titre of adrenal autoantibodies	*No of samples*
1/160	1
1/80	1
1/40	4
1/20	5
1/10	10
1/5	1
Insufficient sample	4

clinically normal subsequently develop the disease. In a study by Betterle *et al*[5] four of nine adrenal autoantibody positive, non-Addisonian patients developed the disease within one to 31 months, and a fifth had reduced adrenocortical reserve.

Our results, therefore, suggest that the incidence of parathyroid autoantibodies in autoimmune adrenal disease is less than that originally observed.[1]

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References

[1] Blizzard RM, Chee D, Davis W. The incidence of parathyroid and other antibodies in the sera of patients with idiopathic hypoparathyroidism. *Clin Exp Immunol* 1966;1:119–28.
[2] Irvine WJ, Scarth L. Antibody to the oxyphil cells of the human parathyroid in idiopathic hypoparathyroidism. *Clin Exp Immunol* 1969;4:505–10.
[3] Doniach D, Bottazzo GF. Polyendocrine autoimmunity. In: *Clinical immunology update. Reviews for physicians*. Edinburgh: Churchill Livingstone, 1981:95–121.
[4] Johnson GD, Holborow EJ, Dorling J. Immunofluorescence and immunoenzyme techniques. In: *Handbook of experimental immunology*. 3rd ed. Oxford: Blackwell Scientific Publications, 1979:15–7.
[5] Betterle C, Zancetta R, Trevisan A, *et al*. Complement-fixing adrenal autoantibodies as a marker for predicting onset of idiopathic Addison's disease. *Lancet* 1983;i:1238–40.

Effect of BPL on haemoglobin electrophoresis

It is the practice of this department to add the compound B-propiolactone (BPL) to whole blood or plasma from patients who are HTLV-III positive. Previous workers,[1 2] have described the effect of BPL on several biochemical and haematological measurements.

During the laboratory investigation of a patient positive for HTLV-III with a sickle haemoglobin, a sample treated with BPL (Sigma Chemicals; final concentration 0·25%) gave a changed haemoglobin electrophoretic pattern, using cellulose acetate in Tris-edetic acid-borate (TEB) at pH 8·9 (Figure). This was also observed with treated normal samples and samples treated with another structural variant (Hb-C). Detection of abnormal haemoglobins was thus rendered impossible.

Further investigation showed that the Itano solubility test[3] for sickle haemoglobin and the sickle test (using sodium metabisulphite)[4] gave inconsistent results that were difficult to interpret. This could lead to false negative findings in patients with the sickle gene. Samples from such patients requiring investigation of a possible haemoglobinopathy should not be treated with BPL.

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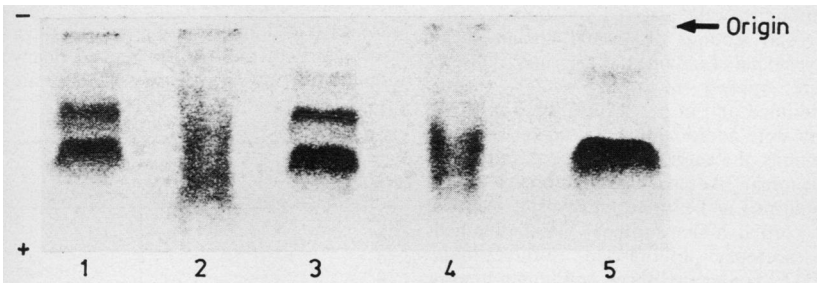
References

[1] Ball MJ, Griffiths D. Effect of chemical analyses of beta-propiolactone treatment of whole blood and plasma. *Lancet* 1985;i:1160.
[2] Ball MJ, Bolton FG. Effects of inactivating HTLV-III on laboratory tests. *Lancet* 1985; ii:99.
[3] Itano HA. In: Lehmann H, Huntsman RG, eds. *Man's haemoglobin*. Amsterdam: North Holland Publishing Company, 1966:291.
[4] Daland GA, Castle WB. Simple and rapid method of demonstrating sickling of the red blood cell: the use of reducing agents. *J Lab Clin Med* 1948;33:1082–6.



The effect of BPL on haemoglobin electrophoresis (1) sickle cell trait control; (2) sickle cell trait sample treated with BPL; (3) sickle cell trait sample untreated; (4) normal sample treated with BPL; (5) normal sample untreated.

Book reviews

Methods in Complement for Clinical Immunologists. Ed Keith Whaley. (Pp 330; £40.) Churchill Livingstone. 1985.

This is a laboratory workbook edited by a leading expert. Professor Whaley has written a substantial proportion himself; other contributions are predominantly from Glasgow. Following an introduction to the complement system, the book outlines in detail laboratory procedures for complement. These cover purification of the different components, their measurement, and immunochemical and related assays with complement components. There are some chapters describing the role of complement in specific disorders such as renal disease. The book most closely resembles a laboratory work book, and this is how it should be used. Methods are broken down into a series of simple stages. A novice in complement immunochemistry should have no difficulty in undertaking many laboratory techniques using complement by simply following the descriptions. Some may find that the book describes a few methods with which they are only too familiar in unnecessary detail. Nevertheless, I would recommend it as an essential practical handbook for laboratory workers in this field.

DL SCOTT

Brain's Diseases of the Nervous System. 9th ed. Sir John Walton. (Pp 701; £45.) Oxford University Press. 1985.

One of the more attractive aspects of specialisation is the close association between clinicians, radiologists, and pathologists. Perhaps none more so than in the neurosciences where the anatomical, functional, and biochemical complexities of the nervous system, including muscle, require that the neuropathologist has a considerable awareness and appreciation of related disciplines. Any text that helps in the acquisition and integration of large amounts of multidisciplinary knowledge is therefore to be greatly welcomed. The ninth edition of *Brain's Diseases of the Nervous System* fulfils this basic need, because it provides a comprehensive account of pathophysiological principles as they relate to the clinical features and investigation of disease and dysfunction of the nervous system. With its extensive modifications and many new refer-