reflexes and increased tone. Plantar responses were flexor. A clinical diagnosis of cirrhosis with portal-systemic encephalopathy was made, and an E.E.G. showing slow waves (4-7 H_3) appeared to support the diagnosis.

He was given neomycin, frusemide, Slow-K, chlorpromazine, and a low protein diet, but he deteriorated further. Ascites increased despite diuretics, and he became more confused and aggressive when disturbed. He was given an infusion of salt free albumin (50 g) and diuretics were stopped but his weight remained constant and he was transferred to this hospital.

On examination he was listless, irritable, and uncooperative. The signs elicited previously were unchanged but it was noted that he had leuconychia and dry, atrophic skin. There was "crazy pavement" cracking of the keratin with erythema in the fissures (eczema craquelé) seen best on the forearms, legs, thighs, buttocks, and lower back. Hair was lost from these areas and from the scalp.

His wife said that he had been depressed and had taken a diet consisting largely of canned soups and fruit for about two years. A detailed assessment by our dietitian subsequently corroborated by the patient, showed that his daily intake of protein was 23 g with some 1,900 calories. The diet appeared adequate in other respects. The clinical diagnosis was therefore protein-calorie malnutrition associated with a poor diet and a gastrectomy.

Investigations were: Hb 13·1 g/100 ml, normal film; E.S.R. 5 mm in 1 hour; electrolytes, normal; urea 17 mg/100 ml; serum albumin 2·5 g/100 ml, globulin 1·3 g/100 ml, SGOT 78 U/ml (normal 20-110); alkaline phosphatase 7 K.A. U/ml; bromsulphalein retention 69% at five minutes, 24% at 45 minutes; liver scan normal; faecal fats 0·9 g/day. $CrCl_3$ test excluded significant enteric protein loss.

TREATMENT AND PROGRESS

The only initial change in therapy was a high protein diet (100 g), and during the next month his recovery was remarkable. He gained 17 kg and lost all oedema, his mental state and appetite improved dramatically, and the skin lesions cleared. Serum albumin rose and the E.E.G. became normal. A jejunal biopsy performed at this time showed normal villous architecture.

Subsequent progress has been disappointing although protein deficiency has not recurred. He was readmitted recently with a cardiomyopathy and sensory peripheral neuropathy. Because these were likely to be due to alcohol a liver biopsy was performed, and showed an active cirrhosis without Mallory's hyaline.

Comment

The dietary history, the clinical signs, and his response to treatment leave little doubt that at the first admission he was suffering from protein-calorie malnutrition. The precipitating factors were his previous partial gastrectomy coupled with depression and loss of his teeth. He has now been shown to have cirrhosis and indeed the two conditions may have co-existed, although there is no direct relation between them (McLaren *et al.*, 1968). The E.E.G. appearances are common to both, but it is highly unlikely that a patient with portal-systemic encephalopathy would make a dramatic recovery on a high protein diet. Although subsequent events have shown the toxic effects of alcohol in this man, his mental state did not resemble delirium tremens and he was never hallucinated.

The cardinal features of kwashiorkor are oedema, irritable apathy, atrophic skin lesions, and the development of red hair. It occurs in children after weaning, and adult cases are unusual even in developing countries. Only 20 cases have been reported in the West. Neale (1968) reviewed the literature and added seven cases. All followed gastric surgery complicated by the contaminated bowel syndrome, pancreatic insufficiency, or anorexia. The exceptions are isolated cases associated with coeliac syndrome, pancreatic insufficiency, and ulcerative colitis, all with anorexia (Jeejeebhoy, 1964), and one which was the result of a food fad alone (Jegenburg, 1968).

References

Jeejeebhoy, K N. (1964). *British Medical Journal*, **1**, 30.
Jegenburg, R. L. (1968). *Acta Medica Scandinavica*, **183**, 67.
McLaren, D. S., Faris, R., and Sekian, B. (1968). *Journal of Tropical Medicine and Hygiene*, **71**, 271.
Neale, G. (1968). *Postgraduate Medical Journal*, **44**, 642.

Addiction to Prednisone

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It is well known that cortisone and its analogues when taken in high dosage may cause acute mental disturbance such as delirium (Engel and Romans, 1959), in about 50% of cases a euphoric rise of mood being the main clinical feature (Michael and Gibbons, 1963). It follows that when steroids are used therapeutically subjective improvement may not only be related to actual suppression of the underlying organic disease process but also to euphoria. Further, it is well known that reduction of steroid medication, especially when carried out rapidly after prolonged therapy, may lead to a temporary insufficiency of adrenal output of steroids. Unpleasant psychological effects may therefore be very real during steroid withdrawal, and may be misinterpreted as a recrudescence of the patient's disease process. Kimball (1971) reported two such patients, one with bronchial asthma and the other with rheumatoid arthritis. We report a case of bronchial asthma in which the psychological dependence on prednisone reached such a degree that it acquired all the characteristics of an addictive state.

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Case Report

A 22-year-old single woman was referred urgently to the outpatient clinic by her general practitioner. She showed symptoms of intense anxiety and expressed fears of recurrence of bronchial asthma although there was no objective evidence of bronchospasm. During interview she was restless and tremulous, smoked heavily, and she consumed tablets of prednisone and Valium in twos and threes. Three days previously she had been prescribed 100 tablets each of diazepam (5 mg), prednisone (5 mg), and salbutamol (2 mg) and by the time she came to the clinic she had consumed nearly all of these. She was also seen to use a salbutamol inhaler frequently. Prednisone medication had started some seven years previously, but this had been intermittent until six months before her referral, when she began to take increasing doses daily.

At the time of referral she was probably taking in excess of 40 mg prednisone a day. She was afraid to leave her home and her telephone in case she might require urgent medical help, but there was no evidence to suggest that bronchospasm had actually been present recently in any appreciable degree. Intermittent asthmatic attacks, two necessitating admission to hospital, had occurred since the age of 12 years. She had had psychiatric inpatient treatment six months before because of anxiety symptoms. She was the youngest of six children, and her parents were elderly. She had left school with a poor academic and attendance record, and had subsequently failed to persist in any training or occupation for long. She had not made stable friendships and an illegimate pregnancy had been terminated one year previously.

Physical examination showed definite Cushingoid features with plethoric moon-shaped facies and acne, bruising on both legs (without any clear history of physical trauma), and peripheral muscle wasting. Height was 5 ft 5 in (165 cm), weight 8 st 3 lb (52 kg) (92% average body weight), B.P. 135/85 mm Hg. No other physical abnormalities were noted on clinical assessment. Routine blood and urine investigations were unexceptional. Chest radiograph showed increased transverse cardiac diameter. *X*-ray picture of hands, tibiae, and fibulae showed definite osteoporosis. The peak expiratory flow rate was 440 l./min (this being normal for her age and height). The patient refused further metabolic investigations.

The diagnosis was thought to be one of secondary Cushingoid state (due to an addictive dependence on prednisone) and bronchial asthma. In view of her distressed state she was admitted immediately to a psychiatric ward. Prednisone was gradually withdrawn over a period of four weeks. She became very anxious as this was being done, but her symptoms eventually subsided in the ward setting and medication with salbutamol (2 mg tablets four times a day as well as by inhaler) and diazepam 5 mg three times a day was continued. She was advised to stop smoking. Her dependence on prednisone was discussed with her at length. When discharged after four weeks she was free from bronchospasm and was no longer receiving steroid medication. Subsequent follow-up proved to be very difficult because she avoided outpatient appointments and changed her family doctor regularly. On at least one occasion she persuaded her new doctor to give her prednisone before he knew the full facts of her case and at a time when she did not have severe bronchospasm. She also sought further supplies of steroids at a hospital accident department soon after her discharge from hospital.

Comment

This patient developed an intense dependence on prednisone after its use in treating her bronchial asthma. It is likely that this dependence was predominantly psychological in nature. In view of the danger that psychological dependence may eventually dominate the clinical picture, it is wise to review the psychiatric history before any patient is given long-term steroid therapy.

References

Engel, G. L., and Romans, J. (1959) *Journal of Chronic Diseases*, **9**, 260.
Kimball, C. P. (1971). *Annals of Internal Medicine*, **75**, 111.
Michael, R. P., and Gibbons, J. L. (1963). *International Review of Neurobiology*, **5**, 243.

Alpha$_1$ Fetoprotein and Antialpha$_1$ Fetoprotein in Acute Viral Hepatitis

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Alpha$_1$ fetoprotein (α_1FP) is known to occur in infants and adults with hepatocellular carcinoma and malign teratoma (Kew *et al.*, 1971), but its presence in other hepatic disorders seems uncommon. While studying cryoprecipitates in acute viral hepatitis and chronic active hepatitis we found that some consisted of α_1FP, and so we decided to look for a theoretical immune response to this antigen.

Patient and Methods

The patient, a woman aged 26, was a technical assistant in our laboratory who often gave blood for use as a normal control. One sample had been stored at −20°C for three months. She became ill, with malaise, headache, mild fever, and asthenia. One week later jaundice developed and the first serum sample was collected. Serum enzyme activity was as high as 1,500 mU/ml for both transaminases and 500 mU/ml for lactic dehydrogenase; serum bilirubin was 4 mg/100 ml. She was confined to bed without further treatment. She was discharged from hospital after 40 days, when the clinical and biochemical findings had returned to normal. Blood samples were taken weekly throughout the illness, starting on the seventh day (see table), and sera stored at −20°C until tested.

Results of Tests on Weekly Blood Samples Taken Throughout Illness

Serum Sample No.	When Taken	Latex Fixation	Hepatitis-associated Antigen	Hepatitis-associated Antibody	α_1FP	Anti-α_1FP	Cryoprecipitate
1 ..	1 week	1/640	+	−	+	−	+
2 ..	2 weeks	1/640	+	−	+	+	+
3 ..	3 weeks	—	+	−	+	+	+
4 ..	4 weeks	—	−	−	+	+	−
5 ..	5 weeks	—	−	−	+	+	−
6 ..	6 weeks	—	−	−	+	−	−

Paper and agar-gel electrophoresis and microimmunoelectrophoresis were performed on an LKB apparatus. Antisera to whole human normal serum, to purified IgG, IgA, and IgM, and to kappa-chains were prepared in rabbits and rendered monospecific by absorptions. Antisera to IgD and lambda-chains were obtained commercially.

Antigammaglobulin factors were looked for by the latex fixation test as described by Singer and Plotz (1956). Lupus erythematosus cell formation was investigated by the classical technique of Hargraves (1954). Antibodies to nuclei, non-organ specific cytoplasm—that is, components—smooth muscle, gastric parietal cells, renal tubules and glomeruli, and bile canaliculi were studied by an indirect immunofluorescence technique using cryostat sections of mouse organs. Goat antisera to human immunoglobulins were prepared in our laboratory and labelled with fluorescein isothiocyanate 12·5 µg/mg protein, according to Nairn (1968). Hepatitis-associated antigen and antibody were investigated by countercurrent electrophoresis in 0·85% 0·05 M agarose-veronal pH 8·2 in the same LKB apparatus.

α_1FP and anti-$\alpha_1$fetoprotein (anti-α_1FP) were looked for by Ouchterlony's immunodiffusion method, Mancini's single

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