TABLE II—Percentages of men with positive autoantibody reactions (grades 1-4) according to time since vasectomy. Percentages of men with reactions of grade 3 or more are given in parentheses

Autoantibody specificity	Prevasectomy group	Postvasectomy groups. Time since operation (years)				
		<1	1-2	2-4	≥5	All times
Smooth muscle	14.4 (4.1)	25.9 (7.4)	29.1 (7.3)	18.6 (4.7)	11.1 (0)	21.2 (4.7)
Nuclei	14.4 (5.2)	11.1 (0)	23.6 (5.4)	23.3 (7.0)	8.9 (0)	18.2 (3.5)
Parietal cells	27.8 (9.3)	33.3 (7.4)	36.4 (5.5)	32.6 (11.6)	42.2 (4.4)	36.5 (7.1)
Reticulin	1.0 (0)	7.4 (0)	3.6 (0)	7.0 (0)	4.4 (2.2)	5.3 (0.6)
Tubules	4.2 (2.1)	3.7 (0)	7.2 (1.8)	7.0 (0)	8.8 (2.2)	7.6 (1.2)
Brush border	32.0 (1.0)	37.0 (0)	23.6 (0)	34.9 (2.3)	53.3 (2.2)	30.6 (1.2)
Mitochondria	1.0	0	1.8	2.3	2.2	1.8
Others†	14.4	22.2	16.4	25.5	20.0	20.6
Any autoantibody	59.8	66.7	72.7	72.1	84.4	74.7
No of men tested	97	27	55	43	45	170

†Bile duct, adventitial, or Kupffer cell staining.

The percentages of men with positive reactions to each antigen are shown in table II. Those who had had vasectomies were divided according to the time that had elapsed since vasectomy; these groups have been described elsewhere.⁴ There was a significant tendency for the proportion of men with at least one autoantibody to increase with time after the operation (χ^2 for trend = 8.91; $P < 0.01$). Although the prevalence of all but one of the autoantibodies was higher after operation, the difference was not statistically significant for any individual reaction. When weak reactions (grades 1 and 2) were disregarded, as is commonly done, the prevalence of several autoantibodies was not higher after vasectomy.

The increased prevalence of weak autoantibody reactions in the post-operative groups of men could not be accounted for by differences in age, smoking habits, or the use of drugs. Nor was the distribution of autoantibodies after operation related to the surgical technique recorded for individual patients. It is interesting, however, that two of the three men who were known to have developed a significant wound infection after vasectomy were found to have three or more autoantibody reactions.

Discussion

Our results suggest that men who have undergone vasectomy may have more weak autoantibody reactions to a variety of antigens than other men. Nevertheless, the results need to be interpreted with caution. Firstly, some of the reactions may have been due to heteroantibody⁸ rather than autoantibody activity. Secondly, the differences observed were small and not significant for any individual reaction. Thirdly, the autoantibody reactions were weak reactions which are common in normal people. Possibly changes in the prevalence of such reactions might be a result of any operative procedure in which tissue is destroyed rather than a specific effect of vasectomy.

Research on the immunological effects of vasectomy has largely been concerned with the development of antibodies to sperm. Crewe *et al.*,⁹ however, measured several autoantibodies in serum taken from 346 volunteers before and six months after vasectomy. They concluded that there was no significant increase in the occurrence of autoantibodies after vasectomy.

It must be emphasised that there is no evidence in our data of induction of strong autoantibody reactions (such as are associated with autoimmune disease). We found no association between the presence of weak autoantibodies and the development of any undesirable consequences of vasectomy.

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SHORT REPORTS

Homozygous sickle-cell disease in a Punjabi Moslem boy

Sickle-cell trait was first noted among aborigines in India in 1952.¹ Since then it has been recorded in various parts of India.² Homozygous sickle-cell disease, however, has not previously been reported either in natives of the Punjab or in Punjabi Moslems. We report such a case.

Case report

A 15-month-old Punjabi Moslem boy was first seen because of fever, diarrhoea, respiratory distress, and abnormal sensory responses. His milestones were delayed. He was pale, underweight, and undernourished. Spleen

and liver were just palpable, but there was no jaundice, clubbing, or peripheral oedema. Crepitations and bronchial breathing were heard at the base of the left lung. There was generalised hypotonia and hyporeflexia, but no signs of meningeal irritation were present. Blood culture was sterile. Cerebrospinal fluid was normal.

Results of haematological investigations were: haemoglobin 4.6 g/dl; packed cell volume 0.17 (17%); leucocytes $18 \times 10^9/l$ ($18\,000/mm^3$)—neutrophils 90%, lymphocytes 10%; platelets $176 \times 10^9/l$ ($176\,000/mm^3$); and reticulocytes 6%. Peripheral blood smear showed pronounced anisocytosis and poikilocytosis; sickling of about 50% of the red cells; fragmented, polychromatic, and nucleated red cells; and a shift to the left in leucocytes. The provisional diagnosis was sickle-cell anaemia in crisis with left lower-lobe pneumonia. Detailed haematological findings in the patient and his parents are given in the table.

The parents refused investigation of the patient's two brothers and two sisters, though apart from the younger girl, who looked "pale," all were said to be normal. There was no history of consanguinity or of unexplained deaths in the family.

Results of haematological investigations

	Patient	Father	Mother
Haemoglobin (g/dl)	4.6	14.0	13.0
Packed cell volume	0.17	0.42	0.38
Reticulocytes (%)	6.0	1.2	1.5
Plasma haemoglobin (%)	40.0	15.0	17.0
Fetal haemoglobin (%)	8.0	<1.0	<1.0
Sickling test	Positive	Positive	Positive
Solubility test	Positive	Not done	Not done
Haemoglobin electrophoresis	SA ₂	ASA ₂	ASA ₂
Haemoglobin-S quantification (%)	89	26	29
GPD (mmol TPNH/h/g Hb)	231	601	527
PGD (mmol TPNH/h/g Hb)	724	362	329

GDP = Glucose-6-phosphate dehydrogenase.

PGD = Phosphogluconate dehydrogenase.

TPNH = Dihyronicotinamide adenine dinucleotide phosphate.

Conversion: SI to traditional units—GPD and PGD: 1 mmol TPNH/h/g Hb ≈ 0.75 g TPNH/h/g Hb.

Comment

Between February 1974 and May 1976, 780 cases of haemolytic anaemia were investigated in our haematology laboratory.³ Of these, 57 were β -thalassaemia and only one was sickle-cell anaemia (the present case). Several groups of workers² had previously failed to find sickle-cell trait among natives of the Punjab. In 1973 three cases of sickle-cell trait were reported among 140 Hindu and Sikh adults in the Punjab⁴ (Chandigarh) but none of homozygous sickle-cell disease. This rarity of sickle-cell abnormality in Punjabis in comparison with thalassaemia is consistent with the racial origin of Punjabis, which has been traced to classic Mediterranean and Indo-Nordic subtypes of the composite Indo-Dravidian race.⁵ Except for the present case, all six cases recorded in Indian Moslems have been of sickle-cell thalassaemia.

¹ Lehmann, H, and Cutbush, M, *British Medical Journal*, 1952, **1**, 404.² Sukamran, P K, *Trends in Haematology*, J B Chatterjea memorial volume. Calcutta.³ Dash, S, and Das, K C. Unpublished data.⁴ Papiha, S S, *Human Heredity*, 1973, **23**, 147.⁵ Hooton, E A, *Up from the Ape*, rev edn. London, Macmillan, 1960.

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Factor VII deficiency associated with nephrotic syndrome

Subclinical disturbances of the blood clotting mechanism in association with the nephrotic syndrome (NS) have been reported on several occasions.¹⁻³ We describe a patient with NS who developed subcutaneous and muscle haemorrhages associated with gross depression of factor VII activity, diminished factor V activity, and raised factor X levels.

Case report

A previously healthy 68-year-old Asian woman presented with a two-week history of swollen legs. She had no other symptoms, there was no history of renal disease, malaria, tuberculosis, diabetes, or bone infection, and she had not recently taken any drugs. She was pale, blood pressure was 150/90 mm Hg, and a third heart sound was heard. Pitting oedema of the legs extended to the inguinal regions. Liver, spleen, and kidneys were not palpable, and there was no ascites.

Haemoglobin 11 g/dl (normochromic and normocytic anaemia); white cell count $5.6 \times 10^9/l$ ($5600/mm^3$); erythrocyte sedimentation rate (Westergren)

66 mm in the first hour; blood urea 8.8 mmol/l (53 mg/100 ml); serum cholesterol 7.1 mmol/l (275 mg/100 ml); total serum protein 41 g/l (albumin 17 g/l); plasma electrolytes normal; liver function values normal; Wassermann reaction negative; hepatitis B surface antigen and antinuclear factor not detected; urine analysis: protein + + +; white cells $20 \times 10^6/l$ ($20/mm^3$); no bacterial growth; protein 8.3 g/24 hours; potassium 17 mmol (mEq)/24 hours; sodium 11 mmol (mEq)/24 hours. Chest x-ray examination showed mild cardiomegaly, and electrocardiography left axis deviation. Rectal biopsy showed no amyloid.

NS was diagnosed and treatment instituted with spironolactone 75 mg eight-hourly and a high-protein vegetarian diet. Three weeks later spontaneous haemorrhages developed in the skin and muscles of both arms. Investigation showed a haemoglobin of 8 g/dl, a prolonged prothrombin time, a normal partial thromboplastin time with kaolin, and a normal thrombin time (see table). Platelet count was $450 \times 10^9/l$ ($450\,000/mm^3$). Russell's viper venom corrected the prothrombin time, indicating factor VII deficiency.

Blood clotting activity and serum and 24-hour urinary protein concentrations before and after steroid treatment. Normal and control values are given for comparison

	Before steroid treatment	At 10 days	At 30 days
Prothrombin time (s) { Patient's value 50 } ratio 3.8	13	34 } ratio 2.6	15.5 } ratio 1.3
Factor VII activity (%) (control value 100)	9	28	100
Factor V activity (%) (control value 100)	40	60	100
Factor X activity (%) (control value 100)	580	550	120
24-hour urinary protein (g) (normal <0.1)	8.3		0.2
Serum proteins (g/l) { Total (normal 66-75) 41			53
{ Albumin (normal 36-47) 17			26

Circulating inhibitors were not detected. In clotting factor assays activity of factor V was 40%, factor VII 9%, and factor X 580%. The patient was transfused with fresh blood, vitamin K₁ was administered parenterally, and prednisolone 40 mg daily was given by mouth. The prothrombin time slowly returned to normal, accompanied by a rise in factors V and VII, and a fall in factor X (see table). Urinary protein fell from 8.3 to 0.2 g/24 hours, and total serum protein rose to 53 g/l (albumin 26 g/l). The haematomas and oedema resolved completely.

Comment

This is the first reported example of haemostatic failure due to acquired factor VII deficiency associated with NS. Previous cases have shown deficiency of either factors IX, XI, or XII, and in none has there been haemorrhage. The cause of the factor VII depletion in our patient was probably excess loss in the urine. Urinary loss of factor IX² and of factors II and VII⁴ has been reported in NS. The absence of liver disease and the increased blood levels of factor X suggest that the factor VII deficiency was not caused by decreased hepatic synthesis of clotting factors. Furthermore, other evidence indicates that protein synthesis is enhanced in NS,⁵ which might also explain the raised blood levels of factor X in this patient. We found no evidence of circulating factor VII inhibitors.

Clotting factor assays were kindly undertaken by Dr R Mibashan, of Hammersmith Hospital.

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