respiration, and shocked. Her pulse was thready (90 beats/minute) and her blood pressure 90/50 mm Hg. Initial laboratory investigation showed spontaneous red cell agglutination and free haemoglobin in the plasma. The haemoglobin concentration was 5·0 g/dl, bilirubin concentration 4 μmol/l (0·23 mg/100 ml), and lactate dehydrogenase activity 1071 IU/l. There was severe acidosis. Acute intravascular haemolysis was diagnosed.

Her level of consciousness deteriorated, and she was transferred to the intensive care unit, where positive pressure ventilation was started. Within four hours after admission severe disseminated intravascular coagulation was evident with profuse bleeding from the rectum and all venepuncture sites; the platelet count, initially $226\times10^9$/l, had dropped to $67\times10^9$/l; the British corrected ratio was 2·5; activated partial thromboplastin time was 93 seconds; fibrinogen concentration was 0·7 g/l; and the concentration of fibrin degradation products was 320 mg/l. She was given a transfusion of blood, fresh plasma, cryoprecipitate, and platelets. Next morning her clinical condition appeared to have stabilised; however, urine output had dropped to 30 ml/h, and there was pronounced haemoglobinuria. Dialysis was considered, but lung compliance decreased rapidly and a shock lung syndrome became manifest. This failed to respond to methylprednisolone, and she died about 32 hours after admission.

Blood samples were sent for immunohaematological investigation[1] and for specific tests to assess the importance of nomifensine in precipitating the haemolysis.

The patient's blood group was 0 Rh positive ($R_1r$); the direct antiglobulin test gave positive results with antisera to IgG, IgM, and complement (C4, C3c, C3d); and the serum contained a strong mainly cold reacting autoantibody and panantibody. Tests for haemolysins, including the Donath Landsteiner antibody, gave negative results. Haptoglobin concentrations were low. The antibody caused agglutination of pooled O cells suspended in nomifensine solution (1 mg/ml in buffered saline pH 7·4) at 37°C but not of pooled O cells suspended in saline or that had been incubated in nomifensine solution and then washed; reactions with class specific antihuman globulins suggested that the antibody was mainly IgM but had an IgG component. Eluates from the patient's red cells agglutinated papainised pooled O cells only in the presence of nomifensine. Latex particles with bound nomifensine were agglutinated only with the patient's serum. Serum samples and eluates from control subjects (healthy subjects and patients suffering from autoimmune disease) gave negative results in all tests.

## Comment

The serological findings strongly suggest that nomifensine precipitated the haemolysis by an immune mechanism. The drug and its antibody may have formed immune complexes that attached loosely to red cells and triggered complement activation, resulting in acute intravascular haemolysis[2]; this is an "innocent bystander" reaction. The relation between the haemolysis, the disseminated intravascular coagulation, and the shock lung syndrome is complex, but all may follow the initial massive activation of complement.

Immune haemolysis is a rare complication of treatment with nomifensine, and previous reports show many features similar to those in the present case.[2–5] Since the introduction of nomifensine in 1977 over 3·5 million prescriptions have been issued in the United Kingdom. Only seven of the 20 cases of haemolysis associated with nomifensine seem to have resulted from the innocent bystander mechanism, but hitherto none has been fatal.

We thank Dr J R A Perumal for permission to report this case, the Committee on Safety of Medicines and Hoechst UK Ltd for advice, Mr J R Booth for the latex studies, and Mrs D Johnson for secretarial help.

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**Regional Blood Transfusion Centre, Sheffield S5 7JN**

R J SOKOL, MD, MRCPATH, consultant haematologist and deputy director
S HEWITT, FIMLS, senior chief medical laboratory scientific officer
D J BOOKER, FIMLS, senior medical laboratory scientific officer
R STAMPS, FIMLS, medical laboratory scientific officer
MICHELLE TAYLOR, medical laboratory scientific officer

**Scunthorpe General Hospital, Scunthorpe DN15 7BH**

RHONA M STEWART, MRCP, MRCPATH, consultant haematologist

Correspondence to: Dr Sokol.

# Toxic epidermal necrolysis associated with streptococcal septicaemia

We describe a case of toxic epidermal necrolysis in a patient with group A streptococcal septicaemia, an unreported association.

## Case report

One week before admission a woman aged 76 developed a blister, presumably traumatic in origin, on a finger of her left hand. Three days later she developed constant upper epigastric pain with bilious vomiting and profuse watery diarrhoea. Over the next two days her left arm and axilla became painful, rendering the arm immobile by admission. Forty eight hours before admission she noticed an erythematous rash over the arm, which spread to the trunk, and blisters developed on the day of admission

On admission she was alert but shocked, with peripheral cyanosis and impalpable pulses. Her blood pressure was 60/40 mm Hg and her heart rate 60 beats/minutes regular. A generalised erythematous rash was present, particularly over the abdomen and chest. Pustules of 1-2 mm were noted. Nikolsky's sign was elicited, the skin peeling off like wet tissue paper, especially over the breasts and abdomen. Tender lymph nodes were palpable in the left axilla and the groin.

Investigations on admission showed a haemoglobin concentration of 14·4 g/dl, white cell count $4·7\times10^9$/l (98% neutrophils, 2% lymphocytes), erythrocyte sedimentation rate 10 mm in the first hour, urea concentration 19·1 mmol/l (115 mg/100 ml), bilirubin 20 μmol/l (1·2 mg/100 ml), alanine transaminase 94 IU/l, total protein 49 g/l, albumin 20 g/l, prothrombin time 20 s (ratio 1·7), partial thromboplastin time 70 s (control 35 s), pH 7·11, carbon dioxide tension 4·4 kPa (33 mm Hg), oxygen tension 11·5 kPa (86·2 mm Hg), base excess −19·1 mmol(mEq)/l, and bicarbonate 10·6 mmol(mEq)/l.

Central venous catheterisation via the right subclavian route was performed. The initial pressure was +1 cm above the anterior axillary line. Four units of plasma were infused, and although this raised her central venous pressure to +5 cm, the blood pressure remained low. The clinical presentation suggested staphylococcal septicaemia with toxic epidermal necrolysis. Flucloxacillin (1 g every four hours), and fusidic acid (500 mg every eight hours) were given intravenously together with benzylpenicillin (2 megaunits every four hours) in case of coexisting streptococcal infection.

Despite receiving dopamine and dobutamine she remained hypotensive and anuric and developed atrial fibrillation, which was controlled by intravenous digoxin. Methylprednisolone 1 g was given intravenously for the metabolic acidosis. Her condition deteriorated rapidly, and she became comatose with an unrecordable blood pressure; she died eight hours after admission.

Results of bacteriological examination, which became available after death, showed group A β haemolytic streptococci in blood cultures, abdominal pus swabs, a finger swab, and a nasal swab all taken before death. A postmortem skin biopsy specimen showed spongiosis of the epidermis with foci of early necrosis in the upper epidermis. There was a moderately intense reactive infiltrate in the upper dermis, the features being compatible with toxic epidermal necrolysis of bacterial toxin (presumed staphylococcal) type.

## Comment

Toxic epidermal necrolysis is well described and has many aetiological factors.[1] It is usually caused by drugs, and only septicaemia due to *Escherichia coli* [2] and staphylococcal skin infections have been reported as bacterial causes. The clinical features and histological findings in this case were those of toxic epidermal necrolysis due to staphylococcus and were so florid that initially staphylococcal septicaemia was diagnosed. However, *Streptococcus pyogenes* group A was subsequently isolated from all bacteriological specimens; there was no bacteriological evidence of staphylococcal infection, and in the absence of other aetiological factors there was little doubt that *Str pyogenes* group A infection had caused this complication.

Streptococcal infection is associated with various mucocutaneous manifestations including impetigo, erysipelas, cellulitis, and tonsillitis due to localised infections. More generalised conditions can exhibit the characteristic rash of scarlet fever, nodular blisters, milia, and abscesses. Exanthemas mimicking meningococcaemia as well as a generalised erythematous, non-purpuric papular rash have also been described.[3 4]

Whereas staphylococcal sepsis can occasionally mimic streptococcal sepsis, the converse rarely occurs, and toxic epidermal necrolysis appears to be a hitherto undescribed manifestation. Our report is a salutary reminder that fatal cases of streptococcal infection still occur,[5] often as a result of minor trauma, and therefore in any acute bacterial infection the possibility of streptococcus should be considered.

We thank Dr B K Mandal, consultant physician, for permission to report this case and Dr R H MacDonald, consultant dermatologist, for the histological examination of the skin biopsy specimen.

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**Regional Department of Infectious Diseases and Tropical Medicine, Monsall Hospital, Manchester M10 8WR**
K U WRIGHT, BSC, MB, house physician
M E ELLIS, MRCP, DCH, consultant physician

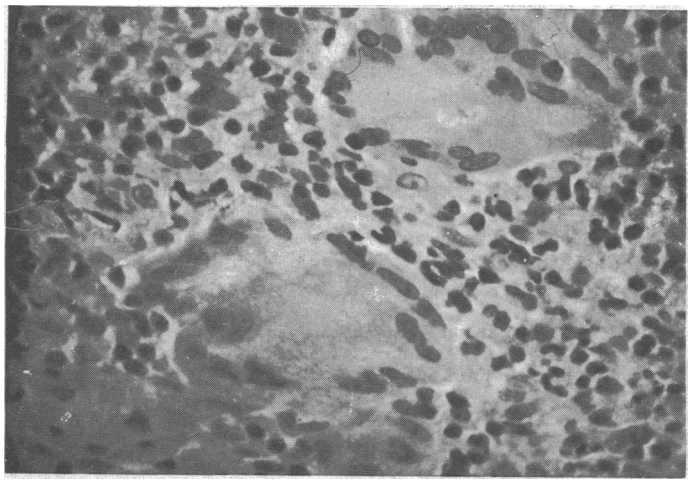
Correspondence to: Dr Ellis.

# Epididymal lesion in tuberculoid leprosy

Epididymal lesions are well recognised in tuberculosis,[1] lepromatous leprosy,[2] genital gonorrhoea,[1] and sarcoidosis.[3] They have not, however, been documented in tuberculoid leprosy. We report on a patient with an epididymal lesion who is thought to have had tuberculoid leprosy.

## Case report

A 25 year old Indian man presented at the dermatology clinic. He complained of skin lesions on the forehead, right thigh, and left scrotal area, all of which had shown loss of sensation during the previous year. For six months he had noticed loss of hair on these sites and a painless nodular swelling in the right testis. Topical drugs for skin lesions were unsuccessful.



Epididymal section showing large giant cells and non-caseating granulomas. ×300 (original magnification).

Cutaneous examination showed plaque like lesions on the forehead, right thigh, and left side of the scrotum, which varied in size. The lesions had dry and scaly surfaces with sharply raised margins. The centres of the lesions were hypopigmented. Hair growth and sensation in the lesions were lost. A thickened auricular nerve was palpable on the left side of the neck. A painless nodular mass was palpable at the lower pole of the right epididymis. Both testicles were normal in size and shape, but sensation was impaired.

Routine tests of blood and urine yielded normal results. Erythrocyte sedimentation rate was 17 mm in the first hour (Westergren method). Results of a serological test for syphilis were negative, hormonal assay for testosterone yielded normal results, and a chest radiograph was normal. Spermography showed a low sperm count. Bacteriological examination of a urethral specimen showed no growth of micro-organisms. A slit smear examination and nasal scraping gave negative results for acid fast bacilli, and results of a lepromin test were strongly positive. Histological examination of skin showed gross enlargement of nerves (to over 500 $\mu$) by granulomas and erosion of the dermis. The giant cells were particularly striking because of their size and multinuclearity. Epididymal tissue had non-caseating granulomas similar to those in the skin and with the same large giant cells (figure). Acid fast bacilli were not present in these sections. Biopsy of the epididymis showed some oedema in and around the granulomas. This picture was consistent with tuberculoid leprosy. A testicular biopsy specimen showed a normal pattern.

He was treated with dapsone 100 mg daily by mouth and clofazimine 100 mg three times a week and was asked to report for further evaluation after three months.

## Comment

The presence of large giant cells and epithelioid cells in epididymal tissue without central caseation is suggestive of tuberculoid leprosy rather than tuberculosis (S Lucas, D Ridley, personal communication). This diagnosis was further corroborated by the classical skin lesions with thickened nerves and positive results of a lepromin test. Lepromatous leprosy could be excluded on the basis of the histological examination of epididymal tissue and the absence of *Mycobacterium leprae* in a nasal scraping and on slit smear examination. Thus this is perhaps the first report describing an epididymal lesion in a patient with tuberculoid leprosy.

We thank the department of pathology at this hospital, and Dr S Lucas and Dr D Ridley for their comments on histopathological sections of skin and epididymis.

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**King Khalid University Hospital, College of Medicine, King Saud University, PO Box 2925, Riyadh 11461, Saudi Arabia**
S S PAREEK, MB, DVD, lecturer in charge
R C TANDON, MB, FRCS, consultant surgeon

Correspondence to: Dr S Pareek, Department of Dermatovenereology.

# Acute respiratory obstruction caused by ingestion of a caustic substance

Causes of acute laryngeal oedema other than infection include abuse of the voice, accidental or surgical trauma, irritating chemicals in gaseous form, thermal injury from inhalation of hot gases, ionising radiation, and allergic reaction.[1] Ingestion of caustic substances is a well known cause of pharyngeal and oesophageal trauma, but it should also be recognised as potentially dangerous to the airway, particularly in infants.

## Case report

A 7 month old boy was admitted having woken distressed and vomiting. He had swallowed a sterilising tablet of the type commonly used in cleaning babies' bottles, which had been given to him by his 3 year old sister. His mother described the vomit as smelling of bleach and said that it had removed some of the colour from his clothes. On admission he showed acute respiratory distress with inspiratory stridor and intercostal and sternal recession. Intravenous hydrocortisone 100 mg was given, and in view of his obviously deteriorating condition he was taken to the operating theatre under the supervision of a consultant anaesthetist and otolaryngologist. Emergency endotracheal intubation was necessary. Laryngoscopy after the airway had been secured showed gross oedema of the soft tissues of the