

CASE REPORTS

Fatal case of sepsis caused by a non-haemolytic strain of *Streptococcus pyogenes*

The β -haemolytic phenotype of *Streptococcus pyogenes* on blood media, which is due to the liberation of streptolysin S, is critical to the recognition of this pathogen in the diagnostic laboratory. We report the isolation of a non-haemolytic variant of *S pyogenes* from a blood culture that was taken from a patient who died of sepsis. Non-haemolytic isolates of *S pyogenes* are uncommon, very rarely associated with bacteraemia or sepsis, and may be difficult to recognise, especially if isolated from non-sterile sites.

Case report

A morbidly obese woman in her 80s was admitted with a 1-week history of a productive cough and breathlessness. Her past history included type II diabetes mellitus, hypertension and chronic leg ulcers. On examination, she was pyrexial (39°C), pulse was 120/min and respiratory rate 26/min. Blood pressure was 95/45 mm Hg. There was no evidence of cellulitis, and no murmurs were detected. A chest radiograph revealed left ventricular failure; no consolidation was evident, although the basal lung fields were poorly visualised. She had a haemoglobin of 10.8 g/dl and a total white blood cell count of $17 \times 10^9/l$ (95% polymorphonuclear cells). C-reactive protein was 198 mg/l. She was treated with intravenous co-amoxiclav for presumed lower respiratory tract infection and sepsis, but died on the day of admission.

Blood cultures (one aerobic and one anaerobic bottle) signalled positive on a Bactec 9240 instrument after 1 day of incubation and Gram-positive cocci in chains were seen in the Gram film. The following day, cream, non-mucoid, non-haemolytic, catalase-negative colonies grew on horse blood agar (Oxoid) incubated aerobically and anaerobically. The colonies became large (3–4 mm in diameter) with a crenated edge and a depressed central ring after 48 h incubation, but remained non-haemolytic (fig 1). Only minimal α -haemolysis was observed around densely grouped colonies. The isolate was sensitive to bacitracin, L-pyrrolidonyl- β -naphthylamide and DNase positive and possessed only the Lancefield group A antigen (Prolex Streptococcal Grouping Latex kit; Pro-Lab Diagnostics, Neston, UK). Identification using both the Vitek 2 and the API Strep systems confirmed the isolate to be *S pyogenes*. The isolate was sensitive to penicillin, erythromycin and tetracycline using the British Society for Antimicrobial Chemotherapy (BSAC) disk testing methodology. The non-haemolytic phenotype remained stable on repeated subculture. The isolate was typed as *emm*-type 28, T-type 28, opacity factor positive (Laboratory of HealthCare Associated Infection, Centre for Infections, Health Protection Agency, Colindale, London).

Discussion

S pyogenes typically produces β -haemolytic colonies on blood agar, and some strains are well-recognised to produce mucoid colonies.

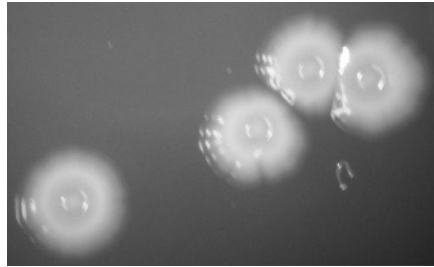


Figure 1 Colonies of non-haemolytic *Streptococcus pyogenes* incubated on horse blood agar for 48 h. Aerobic and anaerobic cultures were identical in appearance.

Non-mucoid, non-haemolytic variants of *S pyogenes* have been recognised previously,¹ but have rarely been reported from blood cultures.^{2–4} The β -haemolytic phenotype is due to the liberation of streptolysin S. Strains that only produce streptolysin O do not exhibit typical β -haemolysis on traditional blood media. Furthermore, streptolysin S isogenic mutants of *S pyogenes* have been shown to be markedly less virulent in a murine model of infection.⁵ This may, at least in part, explain the apparent rarity of invasive infections caused by non-haemolytic isolates of *S pyogenes*. Of the four cases of bacteraemia previously reported, three were elderly patients, including one fatal case of pneumonia,² and one was a 7-year-old child.³ In the latter case, a throat swab from the child had initially yielded a false-negative result. The two cases of bacteraemia previously reported in the UK were due to an infrequently encountered *emm*-type 58 *S pyogenes*.⁴

Non-haemolytic variants of *S pyogenes* may be difficult to recognise when isolated on blood media.^{3,4,6} In the present case, the isolate was obtained in pure growth from a blood culture, and consequently was formally identified. Had the isolate been obtained in mixed culture or from a non-sterile site such as the nasopharynx, the non-haemolytic appearance may have led to the organism being dismissed as a contaminant or as commensal flora without further identification. Clinical microbiologists and biomedical scientists should be alert to the possibility of non-haemolytic variants of *S pyogenes* from both sterile and non-sterile sites.

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David P J Turner, Sarah L Gunn

Department of Clinical Microbiology, Nottingham University Hospitals NHS Trust, Queen's Medical Centre, Nottingham, UK

Correspondence to: Dr David P J Turner, Department of Clinical Microbiology, Nottingham University Hospitals NHS Trust, Queen's Medical Centre, Nottingham NG7 2UH, UK; david.turner@nottingham.ac.uk

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Rare co-existence of multifocal myoepitheliosis with infiltrating ductal carcinoma of the breast

Lesions composed of myoepithelial cells are known to occur in salivary gland, but they are uncommon in the breast.¹ These range from benign lesions, such as myoepithelioma, to malignancies, such as adenoid cystic carcinoma and myoepithelial carcinoma. The predominance myoepithelial cells mainly in the terminal duct-lobular units (TDLUs) with formation of multifocal lesions is termed myoepitheliosis.² In the breast, this condition has been reported previously with other benign lesions such as sclerosing adenosis.

Recently, a role for myoepithelial cells in the pathogenesis of carcinoma has also been suggested. There are no previous reports describing the occurrence of myoepitheliosis with breast carcinoma. This report describes a unique case of dual occurrence of myoepitheliosis with infiltrating ductal carcinoma (IDC). We hope that future studies will disclose the relationship, if any, between the two lesions.

Case report

A 40-year-old woman presented to the surgical outpatient department with a lump in the left breast for the last 6 months. On examination, a hard mass was seen in the central part. A mammographic examination showed it to be a high-density lesion with foci of microcalcification. Fine-needle aspiration cytology from the mass showed the presence of an IDC. A left-sided modified radical mastectomy with axillary clearance was performed subsequently, and the specimen was sent for histopathological examination.

Pathological findings

Grossly, the specimen comprised left breast with overlying elliptical skin flap bearing the nipple, areola and axillary tail. Serial slicing showed two nodules—the larger one located centrally, measuring 6×4×4 cm, and the smaller one located in the left upper quadrant, measuring 2×1×1 cm. The larger nodule was situated close to the deep resection plane (0.2 cm), but the skin, nipple and areola were free. Adequate sections were taken from both nodules for microscopy and all the axillary lymph nodes were sampled.