



## NOSOCOMIAL ENDOCARDITIS DUE TO EXTENDED-SPECTRUM BETA-LACTAMASE-PRODUCING *KLEBSIELLA PNEUMONIAE* IN A CHILD

**To the Editor:** Extended-spectrum beta-lactamase-producing organisms resistant to third-generation cephalosporins have been increasingly implicated in nosocomial infection.<sup>1</sup> Extended-spectrum beta-lactamase-producing *Klebsiella pneumoniae* (ESKP) has been endemic at Tygerberg Hospital since 1993, and has recently been implicated in an outbreak of sepsis in the neonatal unit.<sup>2</sup> Despite improved infection control practices, sporadic episodes of nosocomial sepsis due to ESKP still occur both in the neonatal unit and in other paediatric wards. To the best of our knowledge this is the first report of a child with endocarditis due to ESKP.

An 11-year-old boy with acute myeloid leukaemia presented with fever 4 weeks after commencement of chemotherapy. A Broviac line had been inserted at diagnosis to facilitate parenteral therapy. The patient appeared ill with a temperature of 39.5°C, a pulse rate of 100/min, blood pressure of 110/75 mmHg and a respiratory rate of 30/min. Cardiovascular examination revealed a soft 2/6 pansystolic murmur at the apex of the heart. Bilateral retinal haemorrhages were noted on fundoscopy.

A complete blood count revealed a haemoglobin concentration of 9.5 g/l, a white cell count of  $3.9 \times 10^9/l$  (absolute neutrophil count  $0.76 \times 10^9/l$ ) and platelet count  $76 \times 10^9/l$ . Chest radiography demonstrated the tip of the Broviac line in the right atrium. Vegetations were noted on both mitral valve leaflets, the right ventricular wall and tricuspid valve using echocardiography. ESKP was isolated within 24 hours from two of three blood culture specimens.

*K. pneumoniae* was identified by in-house assays for dehydrochlorination of arginine, decarboxylation of either lysine or ornithine and ability to utilise citrate. Extended-spectrum beta-lactamase (EsβL) production was verified by the double disc diffusion test described by Jarlier *et al.*<sup>3</sup>

Treatment was initiated with piperacillin and amikacin, and chemotherapy was discontinued. The Broviac line was removed and ESKP was isolated from the tip. Once antibiotic sensitivity results became available, piperacillin was replaced with imipenem/cilastatin. The patient became afebrile within 36 hours and antibiotic therapy was continued for 21 days. On completion of treatment, echocardiography showed residual deformity of the anterior mitral valve leaflets and mild regurgitation. Chemotherapy was recommenced on day 10 of appropriate antibiotic therapy. The patient is currently in remission.

Gram-negative organisms are uncommon causes of endocarditis in children and account for about 16% of organisms isolated. Gram-positive organisms such as

*Streptococcus viridans* and *Staphylococcus aureus* are responsible for the majority of endocarditis cases.<sup>4</sup>

*K. pneumoniae* is considered an uncommon cause of endocarditis in children. However, in a recent series involving 11 premature infants, it accounted for 4 of 6 Gram-negative isolates.<sup>5</sup>

Indwelling intravenous catheters are an important risk factor for endocarditis.<sup>6</sup> The catheter may cause sterile vegetations which become infected in the presence of bacteraemia.<sup>7</sup> In the absence of indwelling lines, *K. pneumoniae* is an uncommon cause of endocarditis because of its poor adherence to undamaged cardiac valves.<sup>8</sup>

Nosocomial endocarditis in South African children has been reported by Berkowitz and Dansky.<sup>9</sup> In 2 of 10 patients an intravenous line was implicated, but in their series *S. aureus* was the most common isolate.

An unusual aspect in our patient was the presence of both left and right-sided vegetations in the presence of an indwelling intravenous line, but without a documented intracardiac shunt. This phenomenon has been reported previously.<sup>5,9</sup>

To the best of our knowledge this is the first report of endocarditis due to ESKP in a child. Risk factors in our patient were the presence of an indwelling Broviac line and endemicity for ESKP. Awareness of factors predisposing to nosocomial endocarditis may help early detection and even prevent this potentially fatal condition. The finding of a new cardiac murmur and retinal haemorrhages contributed to the early recognition of endocarditis in our patient and prompted the removal of his indwelling line, before availability of culture results.

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## GENETIC FACTORS IN PTERYGIUM IN SOUTH AFRICANS

**To the Editor:** A pterygium is a wing-like encroachment of the conjunctiva over the cornea, usually medially. Its aetiology remains controversial, but it is considered to arise primarily as a result of ultraviolet light exposure, although other factors may play a role.<sup>1</sup> The importance of heredity in the development of pterygia has been downplayed. Pterygia are commonly seen in South Africa and present a problem in terms of their recurrence following surgery. The overall prevalence of pterygium in South Africa is not known, but surveys suggest it is commoner in some areas than in others.<sup>2,3</sup>

A small study was undertaken to establish whether there might be a genetic basis to pterygium in South Africans. Sixty-three patients with pterygium seen at a private practice in Alberton, Gauteng were questioned about family history of pterygium as well as their exposure to ultraviolet light. Nineteen of the 63 patients (30.2%) gave a history of other family members affected by pterygium. Two cases involved siblings (same generation), 12 involved two generations and five involved three generations.

In addition to these patients seen prospectively, 26 patients who had previously had surgery for pterygium were telephoned and details of family history of pterygium were obtained. Of the 26 patients telephoned, 9 (34.6%) gave a family history of two generations (one or both parents had pterygium).

The 63 patients examined consisted of 49 males and 14 females, with a mean age of 39 years. They were predominantly of Caucasian origin (95%), and 87% were born in South Africa. Although males outnumbered females by 3.5: 1 in the 63 patients studied, in those with a family history of pterygium the ratio was lower at 2.2:1. Thirty patients had unilateral pterygium. Of this number, 10 had a family history (33%), while 9 out of 33 patients (27%) with bilateral pterygia also gave a family history.

Exposure to ultraviolet light is difficult to quantify, but patients were questioned as to whether they felt their work or recreational activities resulted in a large amount of time spent outdoors. Fifteen of 49 males (30.6%) and only 2 of 14 females (14.3%) reported work exposure. Recreational exposure was considered a factor by 20 of 49 males (40.8%), and 4 of 14

females (28.6%). This meant that since some patients had both types of exposure, 53.1% of males and 35.7% of females had either or both work and recreational exposure.

There was no difference in the reported use of spectacles in those with a family history of pterygium and those without. In those with a family history, 53% wore either prescription spectacles or sunglasses (mostly worn for driving or specific outdoor activities), while in the group without a family history 52% reported similar largely part-time use of spectacles.

The concept of heredity in pterygia is not new and was first reported by Gutierrez-Ponce in 1893,<sup>4</sup> with affected families subsequently being reported.<sup>5-9</sup> Booth<sup>10</sup> conducted a case control study in Australia comparing 100 preoperative pterygium patients with 100 control patients without pterygia and found that 38% of the pterygium patients had a family history of pterygium compared with 8 - 12% of the control group. Inheritance of pterygia is usually dominant with a low penetrance. However, it is not the actual pterygium that is inherited but the tendency of the eye to react to environmental stimuli in this way.<sup>11</sup>

Clearly, environmental factors are crucial in the development of most pterygia and the various risk factors have been well assessed.<sup>12</sup> The genetic predisposition of some individuals to pterygium has been less well accepted, although a genetic-environmental interaction model has been proposed.<sup>9</sup>

Further work on the role of genetic predisposition to pterygium may allow appropriate protection to be offered to those at greatest risk.

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