



***Diphtheroid* infection of a total knee arthroplasty following femoral percutaneous transluminal coronary angioplasty**

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A 61-year-old male had a successful left total knee arthroplasty but one year later developed a deep *diphtheroides* infection of the joint following femoral percutaneous transluminal coronary angioplasty without antimicrobial prophylaxis. *Diphtheroides* is an uncommon organism to infect a joint replacement and it has not been reported in the medical literature previously to our knowledge. There is little evidence to support the routine use of prophylactic antibiotics to cover percutaneous transluminal coronary angioplasty in the general population ; however, we would encourage its use, and the use of an alternative entry site (such as the radial artery) if a patient has a joint replacement *in situ*.

Keywords : deep infection ; coronary angioplasty ; total joint replacement.

INTRODUCTION

Total knee replacement surgery is common. The use of local antibiotic in the cement, and systemic antibiotic prophylaxis play a major role in keeping the incidence of deep infections following total knee arthroplasty (TKA) to a minimum (3). The presence of an implant surrounded by an immunocompetent fibro-inflammatory zone results in an increased susceptibility to infections that are very difficult to eradicate and which can have devastating effects (1). Despite this, there are no definitive universally agreed guidelines for the use of antimicrobial prophylaxis for interventional procedures

being undertaken on patients who have a joint replacement *in situ*. To the authors' knowledge, a diphtheroid infection of a TKA has not been reported in the medical literature previously. We report on one such case and discuss the important features.

CASE REPORT

A 62-year-old male had medial compartment osteoarthritis of the left knee and had undergone two failed high tibial osteotomies for this condition. Both osteotomies unfortunately went on to non-union. At no point had an infection been identified. All swabs and tissue samples taken at the time of each osteotomy had grown no bacteria. Due to the failed osteotomies he underwent an uneventful complex primary knee replacement (Kinemax – Total Stabilised Knee (Revision TS), Stryker-Howmedica, Limerick, Republic of Ireland) in January 2004 and made an excellent recovery (figs 1 and 2). All swabs and samples for

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Fig. 1. — AP Radiograph of left TKA showing super stabilised stemmed prosthesis.



Fig. 2. — Lateral radiograph of left TKA showing super stabilised stemmed prosthesis.

bacteriology taken during the knee replacement were negative.

In December 2004 he presented to the emergency department with central chest pain radiating to his jaw and left arm. Blood levels revealed a Troponin I level of 0.17 ug/L (normal : < 0.03 µg/L). ECG changes were consistent with an acute myocardial infarction. A diagnostic coronary angioplasty showed a very tight stenosis of the right coronary artery. He was referred to a local cardiac centre where he had a right femoral percutaneous transluminal coronary angioplasty (PTCA) on the 22nd of December. A 6 French JR4 guide was used with Integrillin and 3000 units of heparin being infused. Prophylactic antibiotics were not administered and he made an uneventful recovery.

On the 13th of January 2005 he presented to the orthopaedic clinic with increasing left knee pain and swelling over the past seven days. A raised C-Reactive Protein of 145.4 mg/l was recorded (normal : 0-8 mg/l) as well as a raised ESR of 19 mm/1h which reached a maximum of 73 mm/1 h on the 28th of January (normal : 2-14 mm/1 h). Turbid fluid was aspirated from the left knee from which *diphtheroides* were cultured. Arthroscopic washouts were performed on the 13th, 16th, 19th and 25th of January 2005. Intravenous Cefuroxime and Clindamycin were prescribed from presentation to the 3rd of February when the patient was discharged from hospital on oral antibiotics. One year after the incident there are no clinical signs of infection.

DISCUSSION

The incidence of bacteraemia induced septic complications after PTCA in the general population is low (0.24%) (5) and therefore antimicrobial prophylaxis prior to this procedure is currently not recommended for routine PTCA (7). To our knowledge there has been no prospective randomised study looking at the role of prophylactic antibiotics in patients undergoing PTCA following TKA, and due to the relatively low numbers of such patients it is unlikely that such a study will ever be undertaken. It is worth noting that dental practitioners do not currently advocate the use of antimicrobial prophylaxis for patients undergoing dental procedures with a joint replacement *in situ* (6). It should however also be borne in mind that PTCA is a far more invasive and a far less common procedure, with greater systemic compromise than dental treatment.

Additionally, prophylactic antibiotics do not guarantee that infection will be avoided. Allergic reactions, including anaphylaxis from cephalosporins and penicillins are not uncommon. The risk of such events must be weighed against the increased risk of joint infection when prophylaxis is not given. A further consideration is that bacteria can gain resistance by overuse of antibiotic drugs. However the number of patients undergoing PTCA with a joint replacement *in situ* is very small and thus the potential for antibacterial resistance developing as a result of prophylactic antibiotic use in this group would, in our opinion, be low.

Diphtheroides forms part of the normal skin flora and is prominent in sebaceous secretions of the external genitalia and the groin (4). It is likely that this skin commensal gained access to the circulation following the femoral puncture during the PTCA. Despite the use of the femoral artery contralateral to the TKA, the patient still developed a deep infection of the joint, most likely due to haematogenous spread. The rarity of the organism in infecting joint replacements (i.e. previously unreported) leads us to believe it is more than a coincidence that this commensal, found most

prominently on the skin located around the puncture site, was the infecting organism in this case. There are several puncture sites available for use in PTCA and in the hands of an experienced cardiologist, procedural and clinical outcomes of PTCA are similar for those introduced at the radial, brachial and femoral sites (2).

CONCLUSION

In view of the small number of patients undergoing PTCA with a joint replacement *in situ*, and taking into account the potentially devastating effects of deep infection of a joint replacement, we would recommend that prophylactic antibiotic should be administered for this invasive procedure. Additionally in view of the less clean skin found in the groin we would recommend that an experienced cardiologist undertakes the procedure and utilises a "cleaner" entry site for the PTCA in patients with a joint replacement *in situ*.

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