

## Correspondence

# The absence of a metal-on-metal bearing does not preclude the formation of a destructive pseudotumor in the hip – a case report

*Sir*—In reply and maybe completion of the article by Bisseling, Tan, Lu, Campbell and Susante in the August 2013 issue, I want to compliment the authors on bringing the subject of metal corrosion in head-neck tapers forward again. I would like, however, to comment as follows.

The authors mention that there is little literature concerning the contribution of the head-neck taper junction to the metal levels in serum. They are right. There are nevertheless publications on this subject that they did not mention in their article.

In 1991 Jacobs et al. published a study on the release and excretion of metal in patients with titanium alloy hip prostheses. The same group (1998) published a prospective, controlled longitudinal study on patients with a primary total hip arthroplasty in which they concluded that raised metal levels were rather common. Also, Kreibich et al. (1996), Pazzaglia et al. (1986), Schäffer et al. (1999), and Saikko et al. (1998) looked into the subject, while the formation of pseudotumors around cementless total hip arthroplasties was published as early as 1992 by Jacobs et al. Vundelinckx et al. (2013) reported on 19 patients with PE couplings, as mentioned by the authors.

In 2003 I wrote a thesis in which, in chapter 2.5, an analysis was made of 142 titanium hip stems with CoCr heads (32 mm) and polyethylene acetabular components in a titanium shell. The patients were 5 to 9 years postoperative when analyzed, none had pseudotumors, and all were unilaterally operated on.

In that study, we found 38.0% of the patients had a serum Co level higher than the reference level for metal workers of 0.27 micrograms/liter for Co (mean 8.07 (SD 5.12)) and 89.4% of the patients had a serum Cr level higher than the reference value of 0.35 micrograms/liter for Cr (mean 8.7 (SD 2.74)). Also, serum titanium levels proved to be higher than the reference value (3.3 micrograms/liter) in 88.0% of patients (mean 6.7 (SD 2.7)).

Since no source other than the taper could be found and I proven that the metal levels were not associated with loosening of the prosthesis I concluded the raised metal levels were a result of abrasion or galvanic ionization at the stem-neck taper.

The possibility and the occurrence of metal ion release from head-neck taper corrosion is an almost forgotten though not uncommon source of metal ions in the serum of patients

after total hip arthroplasty. The majority of patients do have raised metal levels, whichever material coupling of cup and head there is. The occurrence of pseudotumors might be more related to the local immunological reaction of patients to metal ions, than to the metal itself.

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*Sir*—Thank you for your interest in our recent case report (Bisseling et al. *Acta Orthop* 2013; 84 (4): 437-41).

You are absolutely right that there is a rather large volume of relatively early literature available, where metal particle and subsequent metal ion release has been described after hip arthroplasties without a metal-on-metal bearing. In fact, this goes beyond hip arthroplasties only and can be relevant to knee arthroplasties, dental implants, plates for fracture care, and so on. For this reason, the additional list of references kindly provided is still incomplete and could fill a single issue of *Acta Orthopaedica* with references only.

One should realize that we only presented an interesting case report and in its current form we provided 25 references, half of which dealt specifically with modular component corrosion, which in our opinion is a lot for a case report already. A complete review of the literature available was clearly beyond the scope of this case report.

As compared to the earlier literature, a clear merit of our case report is that we presented evidence for the source of the metal debris from the head-neck junction since modern techniques—CMM (coordinate measuring machine) and EDAX (energy-dispersive analysis of X-rays)—were used.

Still, your point about the fact that people only tend to read modern literature and sometimes forget about the massive amount of information already available from earlier days is clearly recognized. This phenomenon accounts in particular for the current global debate about metal-on-metal issues.

The information you refer to in your own thesis from 2003 appears to be very interesting, though we note you used a reference value for metal workers rather than from an orthopedic patient database.

Again we would like to thank you for your comments.

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