Correspondence

Failed hip prostheses in hemodialysis patients

Need for a new mechanism of prosthetic loosening?

Sir—Umeda et al. (1998) reported amyloid (ß2-microglobulin, etc.) deposits around 6 loosened hip prostheses in 4 hemodialysis patients revised because of pain, component migration and severe osteolysis. In addition to the many previously proposed hypotheses and assumptions about the etiology of prosthetic loosening (a disturbed wear product transportation equilibrium, a peculiar immuno-pathological reaction, directional exocytosis for transportation of wear particles, biological loosening of the acetabular component as opposed to mechanical loosening of the femoral component, and stress-shielding inter alia), the authors suggested a new one, viz. the deposition of amyloid.

Recent research indicates that loosening begins at an early stage, due to either insufficient initial fixation or early loss of fixation (Mjöberg 1994, 1997). In cases where loosening has occurred, joint fluid (containing wear debris and bone detritus) may be pumped at high pressure into the interface by prosthetic micromovements and cause local osteolysis in response to the pressure waves interfering with the perfusion and oxygenation of the bone (Anthony et al. 1990). That high fluid pressure waves cause local osteolysis has now been demonstrated (and published in the very same issue of *Acta Orthop Scand* as the paper by Umeda et al.) also in an experimental model (Aspenberg and van der Vis 1998, van der Vis et al. 1998).

Is there a need for a new mechanism of prosthetic loosening confined to hemodialysis patients? Probably not. The increased risk of loosening in these patients may be due to insufficient initial fixation, e.g., because of increased bleeding at the bone-cement interface (Nelson et al. 1992), and the accumulation of amyloid around the loosened prostheses to transportation of ß2-microglobulin, etc. by prosthetic micromovements. Thus, the periprosthetic amyloid accumulation is probably essentially an epiphenomenon, analogous to that of the wear debris in the tissue around loose prosthetic components.

Bengt Mjöberg
Department of Orthopedics, Uppsala University Hospital, SE-751 85 Uppsala, Sweden

Sir—We do not think amyloid initiates loosening, nor do we regard amyloid depositon as a new mechanism of loosening.

We do recognize the "theory of early loosening" (Mjöberg 1994, 1997) as an important hypothesis, but we believe loosening correlates to the condition of the interface or to the primary diagnosis. The difference in clinical outcome after hip replacements for arthrosis and replacement because of avascular necrosis or femoral neck fracture in hemodialysis patients cannot be explained clearly by the current assumptions.

Amyloid is probably one of the factors promoting loosening, rather than a new cause of loosening. A higher incidence of loosening and more progressive and severe osteolysis in hemodialysis patients who have low physical activity cannot be attributed only to weakness of bone, as reported (Campistol et al. 1990, Naito et al. 1994), but probably to unknown biological reactions to the amyloid deposition in the interface. We found little evidence of wear particles or cellular reaction in the interface. This supports our suggestion. Further research on bone metabolism, related to amyloid in hemodialysis patients, will be necessary, e.g., assay of cytokines.

Naoya Umeda
Department of Orthopaedic Surgery, Yao Municipal Hospital, 2-1-55 Minami-taishido, Yao-city Osaka 581, Japan

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Re "Cumulative revision rate with the Scan Hip® Classic I total hip prosthesis." Acta Orthop Scand 1998; 69 (2): 133-7

Sir—We are sorry to have to inform you that there is a discrepancy in our article "Cumulative revision rate with the Scan Hip® Classic I total hip prosthesis", published in the latest issue of *Acta Orthopaedica Scandinavica* (Kesteris et al. 1998). The discrepancy regards the 95% confidence intervals, shown in Figures 1–3, and those in Table 2.

Figures 1–3 show the cumulative revision rates with corrected confidence intervals that are, as described in the text, calculated as Wilson Quadratic 95% confidence intervals (Dorey et al. 1993). However, Table 2 shows the confidence intervals based on the standard error which the statistical package SPSS provides. This leads to discrepant confidence intervals (especially the lower ones in Figures 1–3 and Table 2), and this is not commented on or explained in the text.

A Table with the corrected confidence intervals are, of course, available and will be sent to anyone interested.

Uldis Kesteris, Otto Robertsson,
Hans Wingstrand and Rolf Önnerfält
Department of Orthopedics, Lund University Hospital, SE-221 85 Lund, Sweden

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