

## Erratum

Dahl O E, Garvik L J, Lyberg T. Toxic effects of methylmethacrylate monomer on leukocytes and endothelial cells in vitro. *Acta Orthop Scand* 1994; 65: 147–53.

We should like to make a statement about our article "Toxic effects of methylmethacrylate monomer on leukocytes and endothelial cells in vitro" published in *Acta Orthop Scand* 1994; 65: 147–53.

During our continuing work relating to the association between cemented hip replacement surgery (HRS) and cardiorespiratory depression/deep venous thrombosis (DVT), we have recently become aware that a mistake has been made regarding the methylmethacrylate (MMA) monomer concentrations which in the above-mentioned paper erroneously were given as  $\mu\text{g/mL}$ . The correct concentrations should be  $\text{mg/mL}$  and concentrations  $> 1 \text{ mg/mL}$  are cytotoxic to leukocytes and endothelial cells. This means that our conclusions regarding the direct role of MMA in cardiorespiratory depression probably represent an overstatement, as such high concentrations have never been reported in human central venous blood from patients undergoing cemented HRS. However, these concentrations can certainly be reached locally adjacent to doughy bone cement and potentially cause cytotoxic injury to blood cells and endothelial cells in veins draining the surgical area. Such endothelial derangement may cause nidi for thrombus formation and partly explain the high incidence of proximal DVT following this kind of surgery (Stamatakis et al. 1977, Nillius and Nylander 1979). In addition, blood-borne procoagulant cellular debris from the femoral bone marrow will be sequestered in the pulmonary microcirculation and induce substantial local and systemic hypercoagulation (Dahl et al. 1988, 1993, 1995) which may contribute to both intraoperative cardiorespiratory and vascular dysfunction and postoperative DVT.

Further, MMA in 10–1000  $\mu\text{g/mL}$  concentrations, in concerted action with thrombin triggers monocytes to express increased tissue factor activity which may contribute to the postoperative hypercoagulability (Dahl et al. 1994). We have also performed studies in pigs undergoing HRS which showed that activation of coagulation was higher in femoral vein blood from the operated limb of animals undergoing cemented HRS than in animals subjected to the same, but uncemented, procedure (Dahl et al. 1995). Finally, using 10–100  $\mu\text{g/mL}$  MMA concentrations, which are equivalent to concentrations found in the mixed venous blood of humans (Svartling et al. 1986,

Wenda et al. 1988, Dahl et al. 1992) we have recently demonstrated increased platelet reactivity (unpublished observations), possibly contributing to thrombogenicity. All these factors taken together point to an unfavorable effect of MMA on the thrombohemorrhagic balance. However, the relative importance of—and the detailed mechanisms for—MMA effects are open for future research.

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