■ CORRESPONDENCE

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Proinflammatory Mediator Release after Total Hip Arthroplasty

To the Editor:—We read with interest the recent report by Åvall *et al.*[1] concerning the proinflammatory mediator (IL-6 and IL-8) release after total hip arthroplasty (THA) and blood product infusion. The authors attribute the IL-6 and IL-8 increase after THA to blood product infusion and interpret their data to demonstrate that the IL-6 and IL-8 release is greater in patients receiving autologous *versus* allogeneic red blood cell concentrates. We believe there may be several problems with this manuscript and believe the interpretation of the results may be questionable.

Our first issue regards a true control group. No patients were studied who underwent THA and received no blood product infusion. IL-6 is generated (increased systemic plasma levels) after routine surgery. Cruickshank *et al.*[2] reported plasma levels of IL-6 to increase significantly in various surgical procedures, including THA, peaking approximately 15 h after skin incision and remaining elevated as long as 4 days after THA. They[2] correlated IL-6 release with the total duration of surgery. No report of blood product infusion is mentioned in this manuscript. IL-6 is also released during abdominal aortic aneurysm (AAA) repair[3] in concentrations similar to those reported in the manuscript.[1] We are not suggesting that AAA and THA are similar procedures, but these publications demonstrate IL-6 is released in several different surgical procedures, including THA, as a generalized inflammatory response to surgical trauma. With no group to evaluate the IL-6 response to THA without controlling for other confounding variables (blood product infusion and others—see below), the interpretation of this data is made difficult.

Our second issue regards the influence of local anesthetics (reduce) on monocyte proinflammatory cytokine release.[4] This issue was not addressed in the manuscript. Albeit, the dose of spinal bupivacaine was small, but could this variable influence IL-6 release (compared with a group of patients receiving another type—that without local anesthetic use—of anesthesia? Similarly, were any patients converted during the surgical procedure to general anesthesia? Importantly, mechanical ventilation may impact on proinflammatory cytokine generation and release.[5]

Our third issue regards the influence of blood storage. No cytokines were measured in the infused blood products. Certainly, platelet concentrates are known to contain significant concentrations of IL-6.[6] Also, red cell concentrates (white cell reduced, as used in the Åvall *et al.* study) contain significant concentrations of IL-1 and IL-8,[7] depending on the length of storage. IL-8 levels increase in red cell concentrates with storage duration.[7] This "storage effect" was not controlled or evaluated in this manuscript. Were all allogeneic and autologous red cell concentrates of similar shelf life? Therefore, it is unknown what dose of IL-6 and IL-8 was infused in either group of patients.

Thus, in summary, we believe the problems with this manuscript are: (1) lack of control group not receiving red cell concentrates; (2) influence (if any) of anesthetic techniques; and (3) lack of control (*i.e.,* similar duration) of blood product storage length for the autologous and allogeneic red cell concentrates.

Because of these concerns, we believe additional studies are warranted to document the effects of blood product infusion on proinflammatory cytokine plasma levels.

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