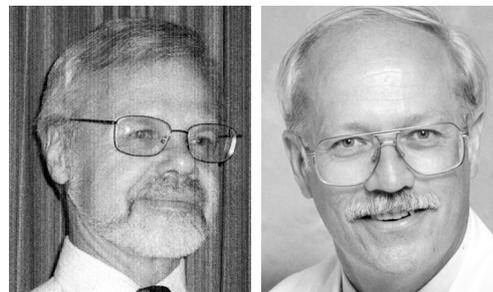


Tidal Lavage in Milwaukee Shoulder Syndrome: Do Crystals Make the Difference?



The pathogenetic understanding of many shoulder disorders is incomplete, and their management is often problematic. Thus, any new treatment success is likely to be greeted with enthusiasm. The report by Epis, *et al* in this issue of *The Journal* suggests that tidal irrigation (TI) may offer longterm benefit to a subset of patients with Milwaukee shoulder syndrome (MSS)¹. Patients with limited radiographic change had long-lasting responses to tidal irrigation, whereas patients with more advanced changes had only limited responses. Their study represents an extension of a previously published brief report².

Following the modern introduction of joint lavage for knee osteoarthritis (OA) either by arthroscopy or needle technique, several reports yielded encouraging results^{3,4}. Subsequently, though, a report appeared that suggested the absence of a benefit beyond that which could be attributed to placebo responses⁵. Since that report, joint lavage for knee OA has seemingly fallen out of favor.

Why should tidal lavage in a degenerative shoulder condition, MSS, be different than in knee OA? If further studies confirm the results presented in this report, the explanation may be related to the constant occurrence of basic calcium phosphate (BCP) crystals in MSS. Although there is no direct proof that BCP crystals cause MSS, circumstantial evidence has pointed to either a direct or indirect role. Thus, TI, which removes crystals (and other debris), potentially could have more benefit in MSS than in knee OA. In knee OA, BCP crystals have been detected in 30%–60% of cases^{6–8}. Wide variance in these estimates may be explained by different techniques for detecting BCP crystals and by differences in the patient populations studied. The importance of crystals in knee OA is also supported by one report in which patients with crystal-associated knee OA did, in fact, respond to TI whereas those without crystals did not⁹.

Another putative explanation for effectiveness observed in the present study, raised as a minor point in the authors' discussion, is intriguing. Tranexamic acid (along with corticosteroid) was injected into the shoulders at the conclusion

of TI. This agent inhibits plasminogen activation and has been used systemically with mixed results to diminish bleeding after arthroplasty. Hypothetically, inhibitors of plasminogen activation may suppress inflammation. For instance, plasminogen is necessary for development of type II collagen-induced arthritis¹⁰. The product of plasminogen activation (plasmin) has matrix-degrading properties and may activate a variety of proteases that also degrade cartilage and tendon matrix. Plasminogen activators are present in joint fluids of patients with OA and in calcium pyrophosphate dihydrate-containing fluids¹¹. Despite this appealing hypothetical framework, it is difficult to envision a single instillation of tranexamic acid having prolonged effects.

The authors suggest that TI may affect the longterm outcome of some patients with MSS. We believe that it is premature to draw such a conclusion on the basis of the current data. Clearly, it is possible that this type of shoulder disorder may spontaneously go through phases of differing symptomatology. In some patients, the resolution of a symptomatic phase may be followed by a quiescent phase, which could be interpreted as a longterm response to treatment or alteration of the natural history of the disease. Thus, additional cases followed for longer periods of time will be necessary to arrive at a definitive conclusion about this form of therapy and its potential longterm benefit. Perhaps more certain is the conclusion that patients with advanced MSS are unlikely to benefit from TI.

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See Efficacy of tidal irrigation in Milwaukee shoulder syndrome, page 1545

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