IS – 36
Treatment of Caustic Ingestions: Are Steroids Worth Giving?

Robert S. Hoffman
Division of Medical Toxicology, NYU School of Medicine

In the late 1940's and early 1950s numerous authors demonstrated that corticosteroids delayed healing of tissues disrupted by various mechanical and thermal insults. Shortly thereafter, Rosenberg and colleagues applied this principle to caustic injury of the esophagus. Although they demonstrated a reduction in stricture formation, many experimental animals developed infectious complications presumed to result from steroid-induced suppression of the immune system.[1] A subsequent study demonstrated that the addition of penicillin effectively attenuated many of these infectious complications.[2]

Based largely on animal data many children were subsequently subjected to months of steroids and antibiotics with unclear evidence of benefit and some clear risks. Little progress was made until 1990 when Anderson and colleagues reported on the results of an 18-year study that randomized 60 children to either 3 weeks of high-dose steroids or placebo.[3] Although the incidence of strictures was not significantly different between steroid treated patients and controls, there was a nearly significant trend toward a lower rate of surgical repair in steroid treated children. While many clinicians used these results to abandon steroid therapy, others noted that Anderson's work was substantially underpowered, and that given the small sample size they were unable to exclude a 30% difference between the groups.

For years it seemed unlikely that another randomized controlled trial would occur, so Howell and colleagues preformed a meta-analysis of data from 1956 to 1991 (n=361), in which steroids significantly reduced the incidence of strictures in patients with 2nd or 3rd degree burns.[4] Using similar methodology, but data from 1991-2004 (n=572), Pelclova and Navratil were unable to show a benefit of steroids and noted many complications.[5] When data from the two previous studies were limited to patients with 2nd degree burns and merged for a pooled analysis Fulton and Hoffman to show a benefit of steroid therapy.[6]

Thus, despite a sound theoretical basis for steroid therapy and some strong evidence from animal models, most experts concluded that the complications of prolonged high-dose steroids likely outweighed any benefits in patients with caustic ingestions. However recent work from Usta and colleagues has reignited the steroid debate.[7] 83 patients with grade IIb burns were randomized to receive 3 days of high-dose methylprednisolone or control. Using both a visual and functional assessment of injury, patients receiving steroids had a significantly better outcome. This study is unique in two ways. First it only enrolled patients with grade IIb injuries; excluding likely unnecessary cases as grades I and IIa almost never cause strictures, and likely futile cases as grade III injuries seem to be too severe to recover. Additionally, by giving a short course of therapy, significant immunosuppression seems unlikely. If this study can be replicated their protocol will likely be adopted in most cases. Since grading is essential for enrollment in the protocol, early endoscopy is recommended.