Drs Kelsey and Mettler respond:

We would like to respond to Dr Dorne's comments. The purpose of our article, and its title, was to draw attention to the fact that the degree of protection many assume to be provided by the gloves does not exist.

From Dr Dorne's letter we conclude that he does put his hands in the direct beam when he deems it necessary. Many interventionalists have this attitude, as did many of our pioneer radiologists. We have measured hand exposures of our interventionalists and have noted high exposures. One interventionalist exceeded the quarterly maximum permissible dose to his hands in a single procedure.

Our point was and is: Don't put your hands in the beam. If you do, be aware that expensive flexible lead gloves do not provide significant protection. The best protection is to keep your hands out of the beam.

Charles A. Kelsey, PhD, and Fred A. Mettler, MD
Department of Radiology, University of New Mexico School of Medicine
Albuquerque, NM 87131

■ David and Goliath

From:

Stanley Sprecher, MD
Department of Radiology, Peninsula Hospital Center
51-15 Beach Channel Drive, Far Rockaway, NY 11691

Editor:

I am confident that I am in the company of many radiologists when I thank Drs Shapiro and Mintz for their interesting "Interlude" (1), which appeared in the January 1990 issue of *Radiology*. However, I was surprised that they dismissed the second case of head injury described in the Bible (1 Samuel 17:49–50) without any discussion, suggesting their belief that the cause was relatively straightforward. In fact, David's use of a stone to slay Goliath is a far more complex and problematic situation than Sisera's death, and it certainly merits discussion. As already pointed out by Drs Rabin and Rabin (2), there is a clear-cut pathophysiologic explanation for how a callow youth like David could have slain the great giant Goliath with a stone.

Undoubtedly Goliath's great size was due to acromegaly secondary to a pituitary macroadenoma. This pituitary adenoma was apparently large enough to induce visual field deficits by its pressure on the optic chiasm, which made Goliath unable to follow the young David as he circled him. The stone entered Goliath's cranial vault through a markedly thinned frontal bone, which resulted from enlargement of the frontal paranasal sinus, a frequent feature of acromegaly. The stone lodged in Goliath's enlarged pituitary and caused a pituitary hemorrhage, resulting in transtentorial herniation and death.

Rabin and Rabin (2) postulate that Goliath's acromegaly was part of a syndrome, type 1 multiple endocrine neoplasia (Wermer syndrome), which is characterized by hyperparathyroidism and pancreatic islet-cell tumors in addition to pituitary adenomas. According to their hypothesis, David's stone entered Goliath's brain via a parathyroid brown tumor in the frontal bone. However, I shall defer to Occam's razor on this point. One disease is sufficient to explain Goliath's timely demise.

References

1. Shapiro R, Mintz A. Head injuries in the Old Testament. Radiology 1990; 174:84.
2. Rabin D, Rabin PL. David, Goliath, and Smiley's people (letter). N Engl J Med 1983; 309:992.

Drs Shapiro and Mintz respond:

We congratulate Dr Sprecher on his astute analysis of Goliath's death at the hands of David. It was not our intention to downgrade Goliath's injury; in fact, one of us (R.S.) planned to make it the subject of a future "Interlude." Hence, we characterized it as a "cerebral concussion and/or contusion *at the very least*" in order to focus on the more problematic issue of Sisera's demise (1). In our opinion, Goliath's death has a more straightforward explanation.

We agree with Dr Sprecher that it is unnecessary to involve Rabin and Rabin's hypothesis that Goliath was afflicted with type 1 multiple endocrine neoplasia (2). In all likelihood, Goliath's growth hormone-secreting pituitary macroadenoma had a large suprasellar component, which not only elevated and compressed the optic chiasm but also obstructed the foramina of Monro with resultant hydrocephalus, increased intracranial pressure, and concentric constriction of the visual fields.

Acute pituitary apoplexy has been reported to occur in approximately 9% of patients with adenomas (3). The incidence of pituitary apoplexy secondary to acute head trauma is significantly less. In cases of the latter, a shearing force applied to the pituitary or its stalk produces hemorrhagic infarction of the gland. There may be associated subarachnoid bleeding. The increased intracranial pressure associated with the obstructive hydrocephalus and the acute pituitary hemorrhage compresses the uncus against the midbrain and the subthalamic structures, as well as the opposite free edge of the tentorium. This produces hemorrhage in these structures, which leads to decerebration and death.

Other important factors to be considered are severe frontal lobe contusion and subdural hematoma along the falx. Since Goliath's helmet protected the temporal bone, the likelihood of acute epidural hematoma is more remote.

References

1. Shapiro R, Mintz A. Head injuries in the Old Testament. Radiology 1990; 174:84.
2. Rabin D, Rabin PL. David, Goliath, and Smiley's people (letter). N Engl J Med 1983; 309:992.
3. Holness RO, Ogundimu FA, Langella RA. Pituitary apoplexy following closed head trauma. J Neurosurg 1983; 59:677–679.

Robert Shapiro, MD,* and Abraham Mintz, MD†
Departments of Radiology* and Neurological Surgery,† University of Miami School of Medicine
PO Box 016308, Miami, FL 33101

■ Vesicoureteral Reflux in Boys

From:

Morris J. Schoeneman, MD,* C. Richard Goldfarb, MD,† Fukiat Ongseng, MD,† and Howard Finestone, MD†
Departments of Pediatrics* and Radiology,† Beth Israel Medical Center and Mount Sinai School of Medicine
1st Avenue and East 16th Street, New York, NY 10003

Editor:

We were intrigued by the report of Ben-Ami et al (1), which appeared in the December 1989 issue of *Radiology*, in which they discussed the findings in 724 boys who underwent voiding cystourethrography. The authors stated that 188 patients were examined because of a preceding urinary tract infection (UTI). Eighty of these had vesicoureteral reflux (VUR), 20 with evidence of renal scarring at excretory urography.

Our concerns relate to the absence of a definition of UTI and to the poor sensitivity of excretory urography for documenting renal cortical scars. Diagnostic criteria for UTI are not provided, and the difficulty of obtaining reliable urine samples for culture in male infants may have resulted in overestimation of the number of boys who really had a UTI (2,3).

The authors also neglected a large body of evidence that renal nuclear scanning with cortical agents, such as technetium-99m glucoheptonate, is more effective in the diagnosis of scars than excretory urography is (4,5). Consequently, the frequency of scars in the boys examined may have been underestimated.