To the Editor:

Over the past few years, multiple articles have appeared on the subject of transforaminal epidural steroid injections. Reports of devastating neurological injuries, including death and paraplegia, fuel concern for transforaminal epidural injections (1-5). There is also a widely-held belief that many cases of severe spinal cord injury have gone unpublished because of medico legal concerns. Cervical transforaminal epidural steroid injections (CTESI), in particular, appear to pose an inherently higher risk because the solution is injected in proximity to spinal cord radicular arteries. The exact mechanism of injury is poorly understood, but may involve the distal embolization of steroid particles leading to spinal cord ischemia (6). Because of the evolving nature of this discussion, I would like to draw attention to certain aspects that deserve further scrutiny.

Although it is acknowledged that real-time fluoroscopic visualization of radiographic contrast dispersal, including digital subtraction imaging, may reduce the incidence of inadvertent arterial injections, little emphasis has been placed on the use of a separate local anesthetic test dose. Most publications have described injections of local anesthetic and steroid mixtures after radiographic contrast confirmation of adequate dispersal (1-4, 6-9). It is conceivable that inadvertent intra-arterial injections have gone undetected. It has long been known, however, that small volumes of local anesthetic accidentally injected intra-arterially around the head and neck may result in easily recognizable symptoms (10). Detection of signs of local anesthetic toxicity may allow the physician to abort the procedure before serious harm is done. Although one recent article advised a separate local anesthetic test dose before CTESI (11), this recommendation has been largely ignored elsewhere (1-4, 6-9). As an illustration, two published cases that resulted in death following cervical CTESI (2, 4) as well as three cases of spinal cord injury following lumbar TFE-SI (1, 3) have all described injections of steroid mixtures without a preceding local anesthetic test dose. In fact, a recent technical description (6) did not specifically address a local anesthetic test dose prior to CTESI. Interestingly, in the report recommending a separate test dose of local anesthetic the authors observed an episode of transient quadriplegia following a presumed accidental injection of intra-arterial local anesthetics. Fortunately, the procedure was aborted without long-term harm to the patient (11). I submit that this evidence points to the need for a separate test dose of local anesthetics prior to CTESI.

The potential benefit of cervical transforaminal steroid injections emerges from a few studies that included a limited number of patients (7-9). However, a head to head comparison of fluoroscopically-guided contrast-enhanced cervical interlaminar and transforaminal epidural steroid injection has not been made. In particular, there is no reason to believe that an interlaminar steroid injection with documented radiographic contrast spread along the affected nerve would be any less beneficial than a transforaminally placed injection at the same level. In addition, a current description of the cervical transforaminal technique relies on the tangential placement of the needle along the posterior aspect of the foramen after contact with the superior articular process of the caudal vertebra has been made (6). This largely results in the spread of solutions along the posterior-lateral epidural space as well as extra-foraminally. Contrary to the case with lumbar transforaminal injections, to my knowledge no publication has reported a preferential spread of solutions along the anterior-lateral epidural space after CTESI. A fluoroscopically-guided interlaminar epidural injection with documentation of adequate spread of radiographic contrast along the affected nerve root is a rational alternative to CTESI.

Finally, most discussions have failed to mention viable alternatives to CTESI for patients with previous spinal surgeries or anatomical deformities. One such alternative involves the injection of steroids via a maneuverable radio-opaque epidural catheter. In one technique, developed by Dr. Gabor Racz at Texas Tech University in Lubbock, Texas, a patented atraumatic catheter (Brevi-Kath, Epimed International, Johnston, NY) is placed via the interlaminar route, usually T1-T2, and guided to the desired cervical segment under fluoroscopic guidance (12). The catheter may bypass anatomical obstructions and ideally results in a site specific injection. Anecdotally, my success rate over the last three years with over 200 cervical interlaminar epidural steroid injections using a needle or catheter approach, and with detailed documentation of spread of radiographic contrast material along the affected nerves, is comparable or superior to the reported success rate with CTESI (7-9).

In summary, practitioners are encouraged to approach the practice of CTESI with extreme caution, use a local anesthetic test dose, and consider alternatives to CTESI such as fluoroscopically-guided cervical catheter directed injections.

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REFERENCES


