

Transforaminal Block and Paraplegia: A Two-Edged Lurking Reef

To THE EDITOR:

We have read the exchanged letters between Drs. Candido and Glaser regarding the safest transforaminal approach and would like to add our 2 cents on the issue (1).

Transforaminal blocks have been associated with devastating neurological complications, particularly paraplegia. Although the exact mechanisms underlying that worrisome outcome have not been elucidated, all cases share a sudden radiculomedullary feeder artery occlusion and the ensuing spinal cord infarction. Since the radiological target advocated for transforaminal injections matches the superoanterior portion of the foramen, it comes as no surprise that this ap-

proach renders radiculomedullary arteries vulnerable to injury (2). The irreversible nature of paraplegia has prompted Drs. Glaser and Candido to proscribe the standard fluoroscopy target and devise alternative approaches instead, either the caudal aspect of the foramen or the lateral parasagittal interlaminar approach respectively (2,3). Recently, even a new system for performing transforaminal injections, designed to help reduce the potential for arterial trespass, has been launched (4). We agree with Candido and colleagues that it is imperative to ascertain if those technical variants really involve less risk of vascular injection, but dissent to performing angiograms prior to hazardous

transforaminal blocks. Although selective opacification of radicular vessels may pinpoint spinal cord lesions, it does not seem overly useful when it comes to spinal interventionism. Transforaminal cannulation is a dynamic process that can abruptly change in a split second and therefore should be evaluated on a real-time basis. Actually, it has been demonstrated that static intermittent fluoroscopy images miss 57% of vascular injections (5). Several reports have exemplified how capturing a fleeting image of contrast vascular pattern on fluoroscopy is capable of avoiding disastrous consequences. Altogether, the best tool pain clinicians currently have at hand for the detection of intravascular penetration is live fluoroscopy along with digital subtraction enhancement (6). On the other hand, we think that not only technical issues matter, but "risk behaviors" play a crucial role as well. In that regard, we were surprised at a recent case report, published by the same group, of delivering phenol through the transforaminal route for managing refractory cancer pain (7). The neurodestructive action of epidural phenol is partly due to its high affinity for blood vessels and the resulting narrowing or obliteration of spinal arterioles and arteries (8). Furthermore, an in-vitro study on a dog's lumbar segmental arteries showed that phenol produces sustained contractile responses, compared to norepinephrine-induced controls (9). As a matter of fact, paraplegia probably has already happened because of transforaminal phenol neurolysis, as reported in a case published years ago (10). Although the authors claimed that paraplegia had been provoked by an intercostal neurolysis, what presumably occurred then was either the direct injection of the neurolytic agent in the intercostal artery lumen, and via the segmental radiculomedullary artery, into the spinal cord matter or, more likely, the

abrupt thrombosis of the Artery of Adamkiewicz by the phenol solution. The reasons adduced in that paper ("...direct puncturing of the artery of Adamkiewicz would have been conceivable. However... this was unlikely because repeated aspiration maneuvers had not revealed any blood") would not be supported today in light of current knowledge (6). In addition, on a CT scan obtained at the level of injection, the needle is clearly seen within the right T11 foramen. Accordingly, we have to conclude that in a previous, although inadvertent, transforaminal phenol neurolysis, a sudden anterior spinal syndrome ensued. Consequently, on the whole we think that the association of phenol with transforaminal blocks is extremely dangerous, i.e. entails an immoderate risk, and should not be performed under any circumstance.

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