Letters and comments

Variations in selective nerve root block technique

COMMENT 1

C Lavy

Oxford University Hospitals NHS Trust, UK
doi 10.1308/003588414X13814021678277

CORRESPONDENCE TO

Professor Chris Lavy, E: christopher.lavy@ndorms.ox.ac.uk

COMMENT ON

Eastley NC, Spiteri V, Newey ML.

Variations in selective nerve root block technique. *Ann R Coll Surg Engl* 2013; **95**: 515–518
doi 10.1308/003588413X13629960048073

I enjoyed this paper and the authors are to be congratulated in picking up the wide variation in techniques that are defined by the term 'nerve root block'. Perhaps their next paper will look at the results from the different techniques? They question why 55% of the respondents to their survey inject the level below the disc herniation while only 39% inject at the level of the disc. I am sure that the main reason is that most blocks are diagnostic and the root commonly affected by a disc herniation is not the root exiting at the level of the herniation but the level below. Consequently, an L4/5 disc herniation usually compresses the L5 root and the L5 root is most easily blocked where it emerges at the L5/S1 level.

COMMENT 2

D Chapple

Salisbury NHS Foundation Trust, UK
doi 10.1308/003588414X13814021678312

CORRESPONDENCE TO

David Chapple, E: david@chapples.co.uk

I am concerned by the misunderstanding and confusion contained in this paper. Selective nerve root blocks (SNRBs) should do what they describe in their name and block a nerve root. Blocking a nerve root indicates an anaesthetic application around the targeted nerve root and its dural sheath, to allow a temporary 'blocking' action of the nerve root. Steroids are not good anaesthetic blocking agents. If a selective diagnosis is desired, local anaesthetic 'blocking agent' can be used and it is sensible then to request an SNRB. (The 4% choosing local anaesthesia only in the article were therefore probably correct.)

If the spinal injection is designed to offer treatment rather than just a block, then some type of steroid is usually added. There is, of course, a whole debate concerning the efficacy of steroids but we should put that aside at this

time. The better name to use for these injections is transforaminal or foraminal epidural steroid injections (FESIs) to distinguish from lumbar or caudal routes of access to the epidural space. The term FESI also states clearly to the patient the main therapeutic component being injected.

The placement of the needle should not give rise to confusion and depends on where the therapeutic effect of the injected substance is desired. Your treatment scenario (with the limited magnetic resonance imaging [MRI] shown) requires a few assumptions to be made by those to whom your scenario was posed. Your non-clinical limited information could be an explanation for the spread of your survey responses. The sagittal and axial MRI slices lateral to your scenario could show L4 exiting foraminal compression and so indicate a possible dual nerve root involvement to both the traversing L5 and the exiting L4 roots.

If the most common area for the nerve root compression in your scenario is taken as being in the L4/5 lateral recess, then it is only the L5 root to which treatment is directed. The needle tip placement in your scenario is clear: placement is required below the L5 pedicle in the safe zone indicated in your diagram. (However, your diagram shows a right nerve root rather than a left nerve root and so the correct answer should be 'on the other side!')

The reason is clear also and not mentioned in your article, namely that if the FESIs are performed with the addition of a radio-opaque dye, then the track of the injected substances is seen to follow the L5 root sleeve in a cephalad direction up to the lateral recess of the L4/5 level and so around the traversing L5 root. If you are trying to treat the L5 traversing root at the L4/5 lateral recess by injecting (as you indicate in your conclusion your preferred needle entry point) at the safe zone under the L4 pedicle, then the amount of injected steroid travelling from your suggested L4 starting position to the lateral recess at the L4/5 and the traversing L5 nerve root is limited as the majority will travel along the path of least resistance around the L4 root to the L3/4 lateral recess. In the presence of a tight lateral recess, there is a much higher resistance to the injected fluid travelling from your suggested sub L4 pedicle starting point to the traversing L5 root in the L4/5 lateral recess. These preferred directions of flow can be demonstrated easily using radio-opaque dye.

An advantage of using the correct needle tip position for the L5 as under the L5 pedicle is that if the L5 root is compressed either in its lateral recess (L4/5 level) or in its exit foramen (L5/S1 level), the FESI needle tip is to the same point, and no confusion arises on the request for L4 and L5 FESI.

In summary:

- If using steroids, request an FESI not an SNRB.
- State the nerve root requiring treatment (L4 or L5 or S1), never the level (L4/5 or L5/S1).
- The needle tip starting point is directed by the number of the nerve root (L5) to be treated and is the safe zone under the same numbered pedicle (L5) for that nerve root.
- The nerve root compression anatomical area (lateral recess or foraminal) is non-contributory.

There has been a lot of confusion on these issues, and a lack of correct and logical teaching. As you rightly state, this means comparison of the effectiveness between different studies is diminished. Professor Rob Fraser of Adelaide, one of the spinal world's leading proponents of the success of spinal injections, taught all of his fellows (of whom there are many in the spinal community in the UK) the above correct needle tip placements in foraminal epidural steroid injections.

I hope that the reasoning is sound and helps clear up any misunderstandings.

AUTHORS' RESPONSE

NC Eastley, ML Newey

University Hospitals of Leicester NHS Trust, UK
doi 10.1308/003588414X13814021678358

CORRESPONDENCE TO

Nicholas Eastley, E: neastley@doctors.org.uk

We are very grateful for the interest in our small study and for being given the opportunity to reply to those points that have been raised. It is clear from even just the two responses we have had that this is a topic worthy of further debate.

Mr Lavy queries whether a different technique might be used depending on whether the injection is diagnostic or therapeutic. A view might be that for a given injection at a given site, if a patient obtains a good but temporary response, the injection was diagnostic and if the effect is permanent, then the injection was therapeutic. We feel a key point is to know what exactly it is you have blocked so that you can interpret the result correctly and therefore make a meaningful decision about subsequent management.

Mr Chapple describes in detail his own philosophy on the use of spinal injections, which he calls foraminal epidural steroid injections (FESIs). To a certain extent, his response illustrates the very point our study makes in that there is more than one view on the role of spinal injections and techniques used.

We would agree with his comments regarding Professor Fraser, particularly as the senior author preceded Mr Chapple as one of Professor Fraser's spinal fellows. Professor Fraser's original paper on root blocks was in relation to lateral disc herniations.¹ The injection technique described in this work

Figure 1 Magnetic resonance imaging reported as showing a disc prolapse producing some compression of the traversing nerve root on the right side. (The arrow was added by the radiology department and has no significance in this instance.)

involved placement of the injection in the foramen at the level of the pathology, and into the potential space between the disc herniation and the affected nerve root. We would argue that this technique also allows for needle placement more medially towards the lateral recess for a more centrally placed disc prolapse and would therefore disagree with Mr Chapple's comments regarding this.

The purpose of our paper was really to draw attention to the variation that exists in terms of the use of nerve root blocks, which we can illustrate with the following case.

A 54-year-old woman was referred for consideration of surgery for right-sided sciatica. She had been suffering symptoms in an S1 root distribution. Her MRI (Fig 1) was reported as showing a disc prolapse producing some compression of the traversing nerve root on the right side.

The patient had previously undergone two root blocks, neither of which had given any relief. Figure 2 shows images from these two previous injections and also confirms that she has a transitional lumbosacral junction. The left image is an oblique view showing a block of the

Figure 2 Images from two previous root block injections, confirming a transitional lumbosacral junction. The white circles indicate the presumed pathology.