The continued practice of intrathecal steroid injection for a variety of spinal pathologies, primarily herniated discs is a further source of concern.

In addition, Nelson and Landau ([1]) have once again raised in the medical arena, the vital issue of the safety of such practice, although their recent letter in the NEMJ dealt with the use of intrathecal methylprednisolone to treat postherpetic neuralgia.

As they stated:

"The risk of complications is more important than the data on efficacy".

They noted that chemical meningitis accounts for half the serious sequelae of a single intrathecal injection of methylprednisolone. (40-80mg)

Amongst the other adverse events, they cited cauda equina syndrome and chronic arachnoiditis, although they did concede that the latter was more often associated with multiple injections.

They very pertinently mention the neurotoxic preservatives in the steroid preparation.

This is taken up by the Editor of the Journal, Dr. Watson (11)who, in his Editorial reply clearly states that the manufacturers, Pharmacia-Upjohn do not recommend their products either for intrathecal or **epidural** administration.

Whilst they concede that it is possible to manufacture a preservative-free preparation, they feel there is a substantial barrier..a delay before marketing; in other words, it is not commercially advantageous!

Other practitioners also joined in with cautionary comments in response to Nelson and Landau's letter.(1)

These included Johannes Lampe, MD, of Dresden in Germany, who was concerned about the risk of aseptic meningitis as well as viral replication which might have increased after methylprednisolone injection.

Another German practitioner, Dr. Henner Niebergall, of Freiberg, questioned the use of a combination of methylprednisolone and lidocaine.

He pointed out that:

"lidocaine is neurotoxic not only when injected into the nerves but also when injected intrathecally at concentrations greater than 2 percent." (citing references)

In reply, Kotani et al, the authors of the original study, remarked that they were fully aware that

"intrathecal methylprednisolone can be neurotoxic" (15);

they excluded patients with neurologic disease from the study, based on the observations that complications had been seen in multiple sclerosis patients.

They admitted that their consent form clearly stated in detail about

"the possibility of serious adverse effects, including life-long paralysis, exacerbation of pain, recurrence of herpes zoster, and even death."

One wonders what percentage risk they quoted for these adverse effects?

I have written extensively elsewhere about the concerns surrounding the use of epidural steroid injections.

Here I will confine myself to mention of the use of fluoroscopy, which has been adopted by the International Spinal Injection Society (ISIS).

Firstly, in August 2000, Botwin et al ([2]) reported an incidence of 9.6% ?minor' complications per fluoroscopically guided transforaminal lumbar epidural injection.

Amongst these were: 8 cases of increased back pain (2.4% of the total participants), 2 increased leg pain (0.6%).

The authors did not report any major complications, but the follow up of only 1-3 weeks after each injection (a series being given over 4 months) would have failed to include such long term effects as arachnoiditis.

Bearing in mind that the use of fluoroscopy is cited as a great way forward in ensuring accurate placement of the steroid, and avoiding inadvertent intrathecal injections, this must surely present a cause for concern.

The second study of relevance to this article is: that of Furman et al([3]) published in *Spine* in October 2000.

In this study, the authors contended that

"there is a high incidence of intravascular injections in transforaminal ESIs that is

significantly increased at S1."

They conclude that

"Fluoroscopically guided procedures without contrast confirmation are instilling medications intravascularly and therefore not into the desired epidural location."

As they point out, this requires that contrast injections should be performed in order to ensure correct placement of the steroid preparation.

However, this brings us back to my previous concerns as to the safety of fluoroscopic procedures: if they are being incorrectly sited in blood vessels, this must also raise the question of them being also inadvertently sited in the subarachnoid space, which would not be detected until or unless contrast medium was injected.

The dangers of intrathecal contrast agents (even the newer type) have been well documented and fluorescein has also been implicated in possible damage([4]).

A further important point was raised by Lowell et al ([5]) when they reported on 3 cases of epidural abscess after intrathecal methylprednisolone.

They concluded that the use of perioperative epidural steroid injections (used at the conclusion of microdiscectomy) may predispose to infection and that a prospective study is needed to examine the use of this procedure.

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[1] Nelson DA, Landau WM *NEJM* March 2001; 344: 1019-1022 Correspondence.

[2] Botwin KP, Gruber RD, Bouchlas CG, Torres-Ramos FM, Freeman TL, Slaten WK *Arch Phys Med Rehabil*
2000 Aug; 81(8): 1045-50 Complications of fluoroscopically guided transforaminal lumbar epidural injections.

[3] Furman MB. O'Brien EM, Zgleszewski TM *Spine* 2000 Oct 15; 25(20): 2628-32 Incidence of intravascular penetration in transforaminal lumbosacral epidural steroid injections.

[4] Moseley JI, Carton CA, Stern WE *J Neurosurg* 1978 May; 48(5):765-7 Spectrum of complications in the use of intrathecal fluorescein.

[5] Lowell Td, Errico TJ, Eskenazi MS, *Spine* 2000 Feb 15;25(4): 516-9 Use of epidural steroids after discectomy may predispose to infection.

[1] Nelson DA, Landau WM *NEJM* March 2001; 344: 1019-1022 Correspondence.