Percutaneous Treatment of Cervical Disk Hernias Using Gelified Ethanol

SUMMARY: This study investigates the efficacy of chemonucleolysis using RGE in the treatment of cervical disk hernias in a small sample of patients who had cervical diskogenic or radicular pain secondary to disk herniations. Results were satisfactory in 89.5% patients, with no adverse events recorded during the procedure or after. The use of RGE shows promising results and might be a feasible and safe alternative in the treatment of cervical disk hernias.

ABBREVIATIONS: CHU = Centre Hospitalier Universitaire; IDH = intervertebral disk hernias; RGE = radiopaque gelified ethanol

CHemonucleolysis is an efficient technique for the treatment of back pain; it consists of a percutaneous intradiskal injection that dissolves the nucleus pulposus and lowers intradiskal pressure. Several years ago, the most widely used substance for this was chymopapain, which had an efficacy of close to 80% in lumbar disk herniations and close to 85% in cervical disk hernias but was withdrawn from the market due, in part, to anaphylactic reactions to this enzyme. After this, the search for a new drug that could have the same efficacy as chymopapain but without the complications led to the use of pure ethanol for chemonucleolysis with very good results and no allergic complications. The problem with pure ethanol was the high diffusibility of the liquid, which sometimes led to radicular burning pain after the procedure and, more important, to epidural leaks, which could be severe especially at the cervical level, where the spinal cord is closer to the dura.

In treating venous angiomas, we had experience in using gelified pure ethanol, which had the same properties as liquid ethanol but could be better controlled at the time of injection and did not diffuse away from the site of injection. We previously published our experience with a similar radiopaque substance in the treatment of lumbar IDH with good results and no complications. In this study, we investigate the potential efficacy of this substance in cervical disk hernias.

Technique

RGE is a mixture of pure ethanol and a thickening substance with tungsten powder. To investigate the efficacy of RGE, we set up a prospective preliminary study. Approval of the ethics committee of the hospital was obtained. Patients sent to be treated for a cervical IDH due to disk herniations. Results were satisfactory in 89.5% patients, with no adverse events recorded during the procedure or after. The use of RGE shows promising results and might be a feasible and safe alternative in the treatment of cervical disk hernias.

Discussion

The main goal of percutaneous interventional techniques for the treatment of disk hernias is to reduce the hyperpressure inside the disk and the hernia that compresses the nerve root and also to reduce inflammation produced by annular tears or even by disk degeneration alone, which can be responsible for pain. Replacement techniques were sought by using decompressive intradiskal techniques based on physical processes such as disk vaporization in nucleoplasty with radiofrequency, electrothermal therapy, or mechanical reduction of the disk pressure by manual or automated percutaneous disectomy. All of them are somewhat effective but more expensive and time-consuming than chemonucleolysis.

Our initial experience with RGE at the cervical level has shown very promising results for the treatment of cervical IDH, with improvement in symptoms in 89.5% of patients, results similar to those published for chymopapain and for ozone, and without allergic complications. The injection of

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RGE was adequately seen under fluoroscopy and was well distributed in the center of the disk and through the tears into the herniated portion without any epidural leaks; this last effect was corroborated on disko-CT performed after the procedure (Fig 1). The results we obtained are similar to ones previously published for lumbar IDH. This similarity makes this technique and the use of RGE a potential alternative for patients with pain secondary to disk pathology at the cervical level (Fig 2).

**Conclusions**

Although this was a small sample, we think that the therapeutic efficacy of RGE at the cervical level is promising and without complications related to the procedure so far. In the future, with larger samples and more controlled studies, it might be an alternative in the treatment of cervical IDH, considering that therapeutic solutions respecting the integrity of the spine should be preferred to treat disk hernias when conventional treatment has failed.
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