Cohort study of lumbar percutaneous chemonucleolysis using ethanol gel in sciatica refractory to conservative treatment

Abstract

Purpose To investigate the efficacy of percutaneous chemonucleolysis using ethanol gel (PCEG) in alleviating ra- dicular pain due to disc herniation after failure of conservative treatment.

Materials and methods After failure of conservative treat- ment, PCEG was performed under fluoroscopic guidance in 42 patients with sciatica >4/10 on a Visual Analog Scale (VAS) for at least 6 weeks and consistent disc herniation on MRI or CT <3 months. The VAS pain score was determined at baseline, then after 1 and 3 months. We assessed the influence of patient-related factors (age, gender, pain duration) and disc herniation-related factors (level, migration pattern, disc herniation-related spinal stenosis) on outcome of PCEG. Results Mean pain duration was 6.7 months. Pain intensity decreased by 44 % and 62.6 % after 1 and 3 months, respec- tively, versus baseline (P=0.007). A mild improvement was noted by the rheumatologist in 30/42 (71.4 %) and 36/42 (85.7 %) patients after 1 and 3 months, respectively, and in 31/42 (73.8 %) and 33/42 (78.6 %) patients by self-evaluation. Patients who failed PCEG were significantly older (49.8 vs.

37.3 years, P = 0.03). None of the other variables studied were significantly associated with pain relief. Conclusion PCEG may significantly improve disc-related ra- dicular pain refractory to conservative treatment.

Key Points
• Percutaneous chemonucleolysis using ethanol gel (PCEG) is

feasible on an outpatient basis.
• PCEG improves disc-related radicular pain refractory to

conservative treatment.
• PCEG is feasible on an outpatient basis.
• Failure of PCEG does not interfere with subsequent spinal

surgery.

cohort study discogel

Radiopaque Gelified Ethanol Application in Lumbar Intervertebral Soft Disc Herniations: Croatian Multicentric Study

Abstract

Objective. Minimally invasive percutaneous spinal procedures are popular in trying to reduce spinal pain. The aim of this paper is to evaluate the safety of intervertebral disc chemonucleolysis and to re- port the effectiveness of a percutaneous, minimally invasive treatment for contained herniated interver- tebral discs in the lumbar spine using the recently marketed radiopaque gelified ethanol.

Methods. Pain relief before and after the procedure was self-evaluated by each patient using a verbal numeric scale (VNS) ranging from 0 to 10. Patients were also scored prior to procedure and after che- monucleolysis during several follow-up periods us- ing the Roland-Morris low back pain and disability questionnaire (RMQ). Follow-up periods were de- fined as 0–6, 6–12, 12–18, 18–24, and 24–30 months. Clinically significant functional improvement (CSFI)

was defined as a decrease of five or more points on the RMQ scale and a decrease of at least 50% of pain intensity using VNS.

Results. Using the RMQ scale, CSFI was achieved in 20/29 patients in the first follow-up period, 20/27 patients in the second follow-up period, 9/12 patients in the third follow-up period, 8/9 patients in the fourth follow-up period, and 4/4 patients in the last follow-up period. Using the VNS rating, CSFI was accomplished in 19/29 patients in the first follow-up period, 19/27 patients in the second follow-up period, 9/12 patients in the third follow-up period, 8/9 patients in the fourth follow-up period, and 4/4 in the last follow-up period.

Conclusions. Intradiscal application of gelified eth- anol may be effective in pain reduction using the VNS and Roland-Morris low back pain and disability questionnaire. The treatment is safe and easy to handle.

Radiopaque Gelified Ethanol Application in Lumbar Intervertebral Soft Disc Herniations

Percutaneous treatment odf cervical and thoracic intervertebral hernias with radiopaque gelified ethanol

Interventional Spine

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Scientific Paper

Purpose

Pure Ethanol has been shown to be efficient in the treatment of disk hernias (1). Nevertheless its use in cervical, thoracic hernias and in hernias with epidural leak at discography appears relatively risky because of the difficulty in limiting its diffusion. We present here a complement of the pilot study dealing with lumbar hernias (2).
The addition of ethylcellulose to ethanol results in a viscous product that nevertheless is injectable.In order to precisely determine the site of the injection an inert metallic powder was added to the product .

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Intradiscal and Intramuscular Injection of Discogel® – Radiopaque Gelified Ethanol: Pathological Evaluation

Abstract

Partial removal of nucleus pulposus with consequent reduction of intradiscal pressure may be obtained with percutaneous intradiscal administration of chemical substances in the intervertebral disc. We used percutaneous intradiscal injection of radiopaque gelified ethanol (“Discogel”) in 72 patients (group 1) with conservative treatment resistant lumbar and radicular pain due to small and medium-size hernias of intervertebral disc to demonstrate its efficacy and safety vs. 72 subjects treated with intra-foraminal and intradiscal injections of a steroid and anesthetic (group 2 or control group). “Discogel” injection was performed with biplane fluoroscopy assistance and under local anesthesia with patient in lateral position on symptomatic side. Amount of “Discogel” injected ranged from 0.8 ml to 1.6 ml. We treated a total of 83 discs. We performed the procedure on one disc in 62 patients; in 9 patients two discs were treated in the same session and in 1 patient three levels were treated in two separate sessions.

In group 1 patient “responders” were 65 (90.3%). Excellent and good results were obtained in 58 patients (80.4%), satisfactory results in 7 patients (9.8%) and poor results in 7 patients (9.8%); among “responders” pain control was quite immediate in 58 patients (89.3%) while in 7 patients (10.7%) there was a delay of 7-10 days. These values were significantly higher than in control group. Also the quality of life was significantly more sustained vs. control group, and this benefit was maintained over time. Concerning complications, in 3 cases (4.15%) we had transitory radicular irritation with neuropathic pain appearance immediately after the procedure and in 1 case (1.30%) transitory sensory-motor deficit due to diffusion of local anesthetic along the introducer needle.

In conclusion intradiscal radiopaque gelified ethanol injection is minimally invasive, low cost, safe and effective procedure that may be considered in proper selected patients before recourse to surgery.

Intradiscal and Intramuscular Injection of Discogel® – Radiopaque Gelified Ethanol- Pathological Evaluation

Percutaneous treatment of lumbar disc herniation with gelified ethanol/ a preliminary stud

Aims and objectives

- Many therapies are available to treat lumbar disc herniation (LDH) ranging from medical therapies to minimaly invasive percutneous treatments and surgery
- A wide range of minimaly invasive percutaneous treatments for LDH have been used: chemonucleolysis with chymopapain, percutaneous lumbar discectomy, laser disc decompression, intra discal oxygen-ozone therapy
- After the withdrawal of chymopapin, a new substance (Discogel ®) is available using the properties of ethanol without its high diffusibility
- Discogel ® is made up of ethanol (96%) with ethylcellulose to increase the viscosity and enhanced with a radiopaque substance (tungsten)
- The objectives of this study are:

1. Evaluate the safety of disc nucleolysis using gelified ethanol in the treatment of LHD when the medical treatment is ineffective
2. Demonstrate the efficacy of gelified ethanol in patients with radicular pain non responding to medical treatment

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Percutaneous treatment with discogel

Lumbar Percutaneous Intradiscal Injection of Radiopaque Gelified Ethanol (Discogel) in Patients with Low Back and Radicular Pain

Abstract

Partial removal of nucleus pulposus with consequent reduction of intradiscal pressure may be obtained with percutaneous intradiscal administration of chemical substances in the intervertebral disc. We used percutaneous intradiscal injection of radiopaque gelified ethanol (“Discogel”) in 72 patients (group 1) with conservative treatment resistant lumbar and radicular pain due to small and medium-size hernias of intervertebral disc to demonstrate its efficacy and safety vs. 72 subjects treated with intra-foraminal and intradiscal injections of a steroid and anesthetic (group 2 or control group). “Discogel” injection was performed with biplane fluoroscopy assistance and under local anesthesia with patient in lateral position on symptomatic side. Amount of “Discogel” injected ranged from 0.8 ml to 1.6 ml. We treated a total of 83 discs. We performed the procedure on one disc in 62 patients; in 9 patients two discs were treated in the same session and in 1 patient three levels were treated in two separate sessions. In group 1 patient “responders” were 65 (90.3%). Excellent and good results were obtained in 58 patients (80.4%), satisfactory results in 7 patients (9.8%) and poor results in 7 patients (9.8%); among “responders” pain control was quite immediate in 58 patients (89.3%) while in 7 patients (10.7%) there was a delay of 7-10

days. These values were significantly higher than in control group. Also the quality of life was significantly more sustained vs. control group, and this benefit was maintained over time. Concerning complications, in 3 cases (4.15%) we had transitory radicular irritation with neuropathic pain appearance immediately after the procedure and in 1 case (1.30%) transitory sensory-motor deficit due to diffusion of local anesthetic along the introducer needle. In conclusion intradiscal radiopaque gelified ethanol injection is minimally invasive, low cost, safe and effective procedure that may be considered in proper selected patients before recourse to surgery.

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https://www.omicsonline.org/open-access/lumbar-percutaneous-intradiscal-injection-of-radiopaque-gelified-ethanol-discogel-in-patients-with-low-back-and-radicular-pain-2167-0846.1000145.php?aid=26628

Percutaneous Treatment of Cervical Disk Hernias Using Gelified Ethanol

SUMMARY – This study assessed the impact and modification of intradiscal, intraforaminal, epi- dural and intramuscular swine injection of a new material, Discogel®- radiopaque gelified ethanol- recently introduced for the mini-invasive treatment of herniated disc. Discogel® is a sterile viscous solution containing ethyl alcohol, cellulose derivative product, added to a radio-opaque element, tungsten. The pig was sedated and under fluoroscopy guidance a needle was positioned within disc L1-L2 followed by intradiscal, intraforaminal, epidural and intramuscular injection of 1 ml of Discogel. As disc control level L4-L5 was considered where nothing was injected. The pig was sacrifed 48 h after injection of discogel and the spine from D10 to S1 was removed and fixed in 10% buffered formalin. The anatomical specimens were cut with an electric saw and analyzed by routine technique then stained with formalin. The specimens containing bone material were treated by DEKAL solution. The specimens were stained with hematoxylin-eosin method and then analyzed by histochemical (Masson -Van Gieson PAS and trichromic stains) and immunochemical methods. Morphostructural examination disclosed a granular material coloured black by hematoxylin-eosin method (tungsten) in paravertebral tissue both in the muscular and connective tissue. Some inflam- matory elements like lymphomonocyte cells and venous stasis were found. No alteration was found where discogel was injected, and the nucleus pulposus, disc, chondromixoid and root ganglium were normal. After intradiscal, intraforaminal, epidural and intramuscular injection of Discogel® no morpho-structural changes in nuclear tissue and annulus were found. Further studies on pigs with immunohistochemical analysis after treatment will confirm the morphological alterations induced by discogel and its action.

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Key words: Discogel, herniated disc

Percutaneous Treatment of Cervical Disk Hernias Using Gelified Ethanol

Lumbar Percutaneous Intradiscal Injection of Radiopaque Gelified Ethanol ("Discogel") in Patients with Low Back and Radicular Pain

lumbar-percutaneous-intradiscal-injection-of-radiopaque-gelified-ethanol-discogel-in-patients-with-low-back-and-radicular-pain-2167-0846.1000145

MSU classification for herniated lumbar discs on MRI: toward developing objective criteria for surgical selection.

Eur Spine J. 2010 Jul;19(7):1087-93. doi: 10.1007/s00586-009-1274-4. Epub 2010 Jan 19.

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Author information

Abstract

Currently, there are over 300,000 lumbar discectomies performed in the US annually without an objective standard for patient selection. A prospective clinical outcome study of 200 cases with 5-year follow-up was used to develop and validate an MRI-based classification scheme to eliminate as much ambiguity as possible. 100 consecutive lumbar microdiscectomies were performed between 1992 and 1995 based on the criteria for "substantial" herniation on MRI. This series was used to develop the MSU Classification as an objective measure of lumbar disc herniation on MRI to define "substantial". It simply classifies herniation size as 1-2-3 and location as A-B-C, with inter-examiner reliability of 98%. A second prospective series of 100 discectomies was performed between 2000 and 2002, based on the new criteria, to validate this classification scheme. All patients with size-1 lesions were electively excluded from surgical consideration in our study. The Oswestry Disability Index from both series was better than most published outcome norms for lumbar microdiscectomy. The two series reported 96 and 90% good to excellent outcomes, respectively, at 1 year, and 84 and 80% at 5 years. The most frequent types of herniation selected for surgery in each series were types 2-B and 2-AB, suggesting the combined importance of both size and location. The MSU Classification is a simple and reliable method to objectively measure herniated lumbar disc. When used in correlation with appropriate clinical findings, the MSU Classification can provide objective criteria for surgery that may lead to a higher percentage of good to excellent outcomes.

https://www.ncbi.nlm.nih.gov/pubmed/20084410

Percutaneous treatment of lumbar intervertebral disk hernias with radiopaque gelified ethanol: a preliminary study.

Theron J[1], Guimaraens L, Casasco A, Sola T, Cuellar H, Courtheoux P.

Author information

Abstract

STUDY DESIGN:

Prospective clinical trial.

OBJECTIVE:

Demonstrate the safety and efficacy of gelified ethanol in the percutaneous treatment of lumbar disk hernias.

SUMMARY OF BACKGROUND DATA:

After the commercial withdrawal of Chymopapain, the need for new substances to treat intervertebral disk hernias was evident. Good results were obtained with pure ethanol, but this substance was difficult to handle. We decided to use a similar substance mixed with ethylcellulose to increase its viscosity and enhanced with radiopaque material.

METHODS:

Two hundred seventy-six consecutive patients sent to be treated of a lumbar intervertebral disk hernia percutaneously were included in this preliminary study and treated with radiopaque gelified ethanol (RGE) and intra-articular steroids. Three groups were set, group A for patients to be treated only with RGE and groups B and C for difficult cases presenting a narrow canal, foraminal hernia, or hiperalgic sleepless hernia, treated with RGE plus another intradiscal technique, automatized percutaneous diskectomy for group B and radiofrequency nucleoplasty for group C.

RESULTS:

Very good or good results were obtained in 202 (91.4%) of the 221 patients in group A. Of the 44 patients in group B, 37 patients (84%) presented very good or good results and in 9 (82%) of the 11 patients of group C, we obtained similar results. There was no allergic complication in any of our patients. Short-term follow-up with magnetic resonance showed little or no changes in the intervertebral disk but there was discordance with clinical signs. Long-term follow-up magnetic resonance showed a dramatic reduction in hernia volume.

CONCLUSIONS:

This preliminary study shows the efficacy and inocuity of this new substance that could take over the Chymopapain therapeutic field.

https://www.ncbi.nlm.nih.gov/pubmed/17912130

Treatment of chronic low back pain – new approaches on the horizon

Abstract: Back pain is the second leading cause of disability among American adults and is currently treated either with conservative therapy or interventional pain procedures. However, the question that remains is whether we, as physicians, have adequate therapeutic options to offer to the patients who suffer from chronic low back pain but fail both conservative therapy and interventional pain procedures before they consider surgical options such as discectomy, disc arthroplasty, or spinal fusion. The purpose of this article is to review the potential novel therapies that are on the horizon for the treatment of chronic low back pain. We discuss medications that are currently in use through different phases of clinical trials (I–III) for the treatment of low back pain. In this review, we discuss revisiting the concept of chemonucleolysis using chymopapain, as the rst drug in an intradiscal injection to reduce herniated disc size, and newer intradiscal therapies, including collagenase, chondroitinase, matrix metalloproteinases, and ethanol gel. We also review an intravenous glial cell-derived neurotrophic growth factor called artemin, which may repair sensory nerves compressed by herniated discs. Another new drug in development for low back pain without radiculopathy is a subcutaneous monoclonal antibody acting as nerve growth factor called tanezumab. Finally, we discuss how platelet-rich plasma and stem cells are being studied for the treat- ment of low back pain. We believe that with these new therapeutic options, we can bridge the current gap between conservative/interventional procedures and surgeries in patients with chronic back pain.

Treatment of chronic low back pain – new approaches on the horizon

Sciatica from disk herniation: Medical treatment or surgery?

Disk-related sciatica is a common disorder that resolves without surgery in 95% of patients within 1 to 12 months. Several treatment strat- egies designed to hasten recovery, enable a return to previous social and occupational activities, and prevent chronicization have been evaluated. Available efficacy data support the use of analgesics, nonsteroidal anti-inflammatory drugs, and epidural steroid injections, which probably re- lieve the pain and improve the quality of life without radically changing the midterm outcome. After a specialized evaluation of physical, psy- chological, social, and occupational factors, surgery may be offered to patients with persistent nerve root pain (as opposed to low back pain). The complication rate ranges from 1% to 3%. Surgery is clearly effective, shortening the time to recovery by about 50% compared to nonsurgical treatment. Whether one specific surgical procedure is better than others remains unclear. Methodological weaknesses of studies evaluating the efficacy of percutaneous methods preclude definitive conclusions. Bed rest, systemic glucocorticoid therapy, spinal manipulation, bracing, spinal traction, and physical therapy have no proven effects on the outcome of sciatica.

Sciatica from disk herniation- Medical treatment or surgery