

Conservative Treatment of Cervical Discs without Myelopathy: A Three Years Follow-up

MOHAMED SHABAN, M.D.* and AHMED A. ABDELKHALEK, M.D.**

The Department of Neurosurgery, Faculties of Medicine, Bani-Souf and Cairo** Universities*

Abstract

Background: The natural course of disc prolapsed in the cervical region is not fully known, and clear indications for operative intervention apart from obvious weakness or radiological evidence of cord injury, cannot be established from the literature. Several works and reviews had demonstrated that most massive lumbar disc prolapse are the most likely to resolve, and still no enough studies about prolapsed cervical discs.

Aim of Study: This study was designed to determine whether large lateral cervical prolapsed discs without myelopathy can be safely managed conservatively leading to clinical & radiological improvement.

Patients and Methods: We prospectively collected the data from 48 patients followed at outpatient clinic in Cairo University and Bani-Souf University Department of Neurosurgery from period from march 2011 to March 2014 during this period all cases undergo clinical assessments, magnetic resonance imaging (MRI) and received intermittent medical treatment. Selected patients had severe brachialgia at first presentation but began to show clinical improvement despite the one side disc migration evident on initial imaging. The Karnofsky Scale was used to measure function and changes in performance.

Results: Initial follow-up at three and six months showed positive response in 44 patients (91.6%). Follow-up at a 12 months' average revealed that 42 patients (87.5%) had a complete and maintained recovery. Only 6 cases had unsatisfactory progress and need discectomy. The average scoring system to assess disability raised from 60% to 90%. The change that occurred in the volume of extruded disc material decreased of 50% in disc volume. There was no good association between medical improvement and the degree of disc regression.

Conclusion: A large lateral disc material extrusion in the cervical vertebrae treated conservatively can pursue a favorable clinical course. If early improvement is shown, the far timed follow is excellent, and even substantial cervical disc prolapses can be dealt with non-surgically.

Key Words: Cervical disc – Conservative – Pain.

Correspondence to: Dr. Mohamed Shaban, The Department of Neurosurgery, Faculty of Medicine, Bani-Souf University

Introduction

CERVICAL disc prolapse result from herniation of the nucleus pulposus part of the intervertebral disc causing compression of cervical cord or cervical spinal root, according to degree of herniation cervical disc prolapse is classified into: (1) Disc bulge, (2) Protrusion, (3) Extrusion, (4) Sequestration [1].

Cervical radiculopathy is a condition that result from cervical nerve root compression, clinically patient present mainly with brachialgia (pain in the ipsilateral upper limb matching with the dermatome affected), according to a study performed between 1976 and 1990 found that the annual incidence of cervical radiculopathy was 107.3 per 100,000 in men and 63.5 per 100,000 in women [2-5]. A recent study had found that the incidence is 1.79 per 1000 person per year [6-10], most patients are in the 4th or 5th decade of life, nerve root compression is due to disc herniation or bony osteophytes, C6-7 and C5-6 are the most common levels (accounting for 90% of all cases) affected and mostly due to degenerative changes that occur with age [11-15].

Those patients are usually treated conservatively, most of patients will show improvement and surgery will be only indicated if patient had intractable pain not responding to conservative treatment, myelopathy, neurologic deficit or radiological evidence of cord injury, the duration of the conservative therapy is not exactly known as the natural history of cervical disc prolapse is still not clear [16-18].

Aim of study:

In our study we will determine if cervical radiculopathy can be safely treated conservative-

lyleading to clinical & radiological improvement with comparison with other studies.

Patients and Methods

The data were collected prospectively from 48 patients followed at outpatient clinic in Cairo University and Bani Souf University Department of Neurosurgery on the period from March 2011 to March 2014.

Inclusion criteria:

- 1- Age 20 to 55 years.
- 2- Brachialgia of at least two months' duration.
- 3- Cervical disc herniation with root compression seen in MRI matching with brachialgia.

Exclusion criteria:

- 1- Signs of myelopathy.
- 2- History of cervical disc surgery.
- 3- Cervical spine instability.

In our study there were 28 males and 20 females, age between 25 and 55 years with medium age of 45 MRI cervical spine done for all patients showed cervical disc herniation matching with the side of brachialgia.

All patients had full history taking, general and neurological examination, visual analogue scale (VAS) for arm pain and karnofsky performance scale were taken at first visit, 3,6 months, one, two and three years, VAS ranging from 0 (no arm pain or tingling sensation) to 100 (the most severe pain or tingling sensation I had before), Karnofsky scale to assess functional impairment and effect of treatment from 0 to 100%.

MRI at first visit then after 1 and 3 years (the difference in size of disc herniation and nerve root compression were assessed).

Conservative treatment of our patients were in the form of:

- 1- *Immobilization:* We instructed our patients to use a soft neck collar in order to decrease neck motion and nerve root irritation, for a period of 2 weeks as longer periods may lead to neck muscles atrophy.
- 2- *Physiotherapy:* Exercise, ultrasound and infrared, exercise will begin with range of motion movement exercises and gradually progress to strengthen exercises when the pain subsides, sessions will be 3 times per week for 10 weeks.
- 3- *Medications:* Analgesics as non-steroidal anti-inflammatory drugs (NSAIDs), muscle relax-

ants, medications for neuropathic pain as pregabalin.

- 4- *Traction:* A modality of treatment by applying gradually increasing weight ranging from 5 to 12 Kg.
- 5- *Epidural injections:* If the other methods fail, cervical epidural corticosteroid injection can be used, the mode of work of corticosteroid injection is that it decreases inflammation around the nerve root stabilize the neural membrane and block C fibers in the dorsal root ganglion [11] by review of literature on epidural corticosteroid injection we found that it may lead to short-term improvement in patient symptoms [15].

Results

In our study there were 48 patients with cervical disc prolapse causing radiculopathy, 28 males and 20 females with age ranging from 20 and 55 years with a medium age of 45.

Brachialgia (with duration more than two months) was the main symptom in all patient with a medium VAS of 80.

Karnofsky scale was assessed for all patients and it was ranging from 60 to 80% with mean of 72%.

MRI cervical spine done for all patient showed cervical disc herniation, the degree of herniation was assessed.

After three months 44 patients (91.6%) showed improvement regrading brachialgia with mean VAS reducing to 20 and the mean karnofski scale increased to 85%.

After six months the 44 patients (91.6%) the mean VAS reduced to 10 and karnofski scale increased to 92%.

At 12 months follow-up 6 of our patients showed increase of brachialgia not responding to conservative management so surgery was done through anterior cervical discectomy and fusion, all showed improvement of condition with 2 cases (33%) with transient dysphagia and one case (17%) with superficial wound infection. The remaining 42 patients (87.5%) showed complete relieve of pain (VAS=0) and functional recovery (Karnofsky=100%) and remained pain free till three year follow-up.

Table (1): Follow-up period.

| | Before treatment | After 3 months | 6 months | One year | Three years |
|----------------------|------------------|----------------|------------|------------|-------------|
| No. of patients | 48 | 44 (91.6%) | 44 (91.6%) | 42 (87.5%) | 42 (87.5%) |
| Mean VAS score | 80 | 20 | 10 | 0 | 0 |
| Mean Karnofsci scale | 72% | 85% | 92% | 100% | 100% |

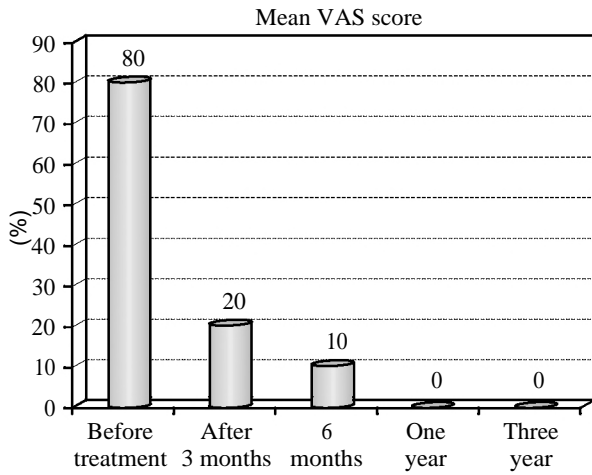


Fig. (1)

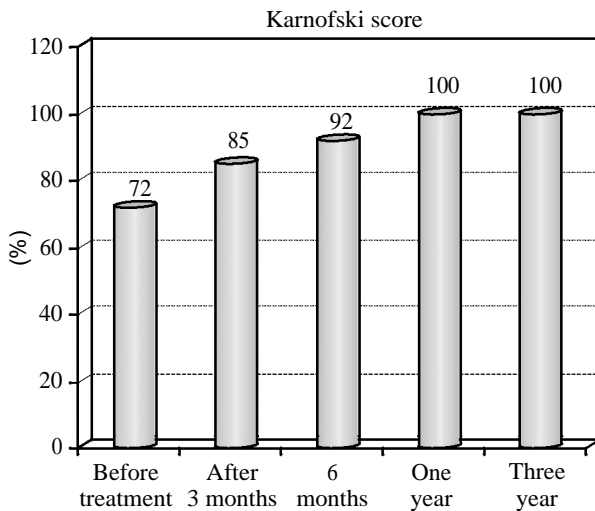


Fig. (2)

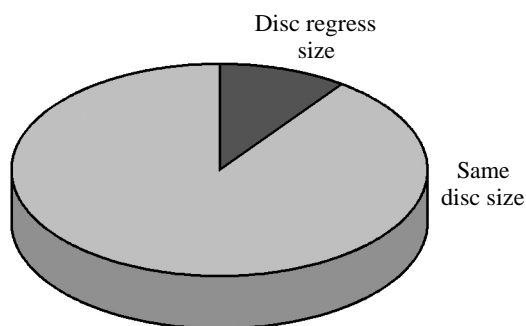


Fig. (3): Percentage of cervical disc regression.

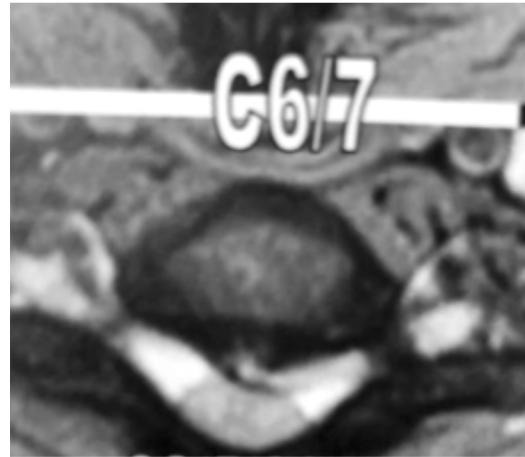


Fig. (4): MRI cervical spine axial view showing C6-7disc herniation.



Fig. (5): MRI cervical spine axial view after one year showing regression of C6-7 herniation.

Discussion

Cervical radiculopathy is a common problem that can be treated either conservatively or surgically, conservative treatment aims to reduction of pain and function improvement [7].

In our study we had included 48 patients with cervical radiculopathy with brachialgia as the main symptom with duration more than two months in our outpatient clinics, treating them conservatively (medical treatment, immobilization, physiotherapy, cervical traction and epidural injection).

The medium VAS of pain was 80 at first visit and karnofsky scale ranging from 60 to 80% with a mean of 72%, after three months 44 patients (91.6%) showed relieve of pain with reduction of mean VAS to 20 and increase of the mean Karnofski scale to 85%, After six months in the 44 patients (91.6%) the mean VAS reduced to 10 and the mean Karnofsky scale increased to 10%.

At 12 months follow-up 6 of our patients (12.5%) showed increase of brachialgia not responding to conservative management so surgery was done through anterior cervical discectomy and fusion with improvement of condition with 2 cases (33%) with transient dysphagia and one case (17%) with superficial wound infection.

The remaining 42 patients (87.5%) showed complete relieve of pain (VAS=0) and functional recovery (Karnofsky=100%) and remained pain free till three year follow-up.

Radhakrishnan et al., [10] presented a 4 years study in which 90% of patients with cervical radiculopathy who were treated conservatively were asymptomatic or with mild pain, Sampath P [13] also had a similar finding.

A dutch randomized controlled trial on patients with cervical radiculopathy were treated conservatively stated that VAS for brachialgia had decreased from 68-72 to 20-25 during six months [8].

Sarita van Geest et al., [12] stated that in patients with cervical radiculopathy both conservative treatment and surgery had the same results on pain improvement after one year follow-up, so he concluded that conservative treatment is better due to cost effects of surgery.

Persson et al., [9] had a study comparing surgery, cervical collar or physiotherapy, surgery was better in pain relief at 4 months follow-up, but at 16 months follow-up there were no difference between the three modalities of treatment regarding pain relief.

The British association of physical medicine [1]. Conducted a study on 493 patients with cervical radiculopathy comparing traction, collar, placebo traction, placebo heat or placebo tablet, they found no difference in the five groups regarding pain, in all treatment groups 75% of all patients showed improvement at four weeks follow-up.

Heckmann et al., [3] this study on herniated cervical disc with radiculopathy 39 patients (65%) were treated conservatively and 21 patients (35%) had surgery, brachialgia was totally or partially

improved in 100% of conservatively treated patient and in 95.1% of patients who had surgery.

Wong JJ et al., [18] 2012 presented that patients with cervical radiculopathy showed improvement within 4 to 6 months and complete recovery tend to occur between 2 and 3 years in 83% of patients.

The pathogenesis of spontaneous regression of herniated disc is that it is considered as a foreign body having inflammatory reactions, phagocytosis and neovascularization so leading to size reduction [6].

5 of our patients (10%) showed spontaneous regression of herniated cervical disc as recorded by follow-up MRI at one and two years, the five patients were of the extruded disc type, no relation between disc regression and symptoms improvement, our results were also similar to the results of other study which was as follow:

Federico C et al., [2] had reported four cases with cervical disc herniation that showed regression of disc prolapse after conservative treatment or cervical collar and stated that no relation between disc regression and relief of pain as pain resolve in some patients without reduction of disc herniation and also reduction of disc herniation occur in other patients without relive of pain, the same was reported by Tchang et al. [16] so in our study the success rate of conservative treatment in cervical disc radiculopathy is 87.5% which was similar to other studies, and also is matching with other study that spontaneous regression of cervical disc prolapse is uncommon condition especially in large extruded disc the other studies also stated that was no difference between conservative treatment and surgery in the management of cervical disc prolapse with radiculopathy.

Conclusion:

Cervical disc radiculopathy is a self-limited disease that could be successfully treated conservatively in most of patients, regression of disc prolapse is an uncommon condition that may occur especially in large lateral disc material extrusion, and usually not related to pain relieve.

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العلاج التحفظي لانزلاق الغضروف العنقي : متابعة ثلاث سنوات

المقدمة : المسار الطبيعي لإنخفاض الغضروف العنقي غير معروف بشكل كامل، ولا يمكن إثبات المؤشرات الواضحة للتدخل الجراحي، بصرف النظر عن الضعف الواضح أو الأدلة الإشعاعية على إصابة الحبل الشوكي. وقد أظهرت العديد من الأعمال والمراجعات أن معظم حالات هبوط القرص القطني الضخمة هي الأكثر احتمالاً للحل، وحتى الآن لا توجد دراسات كافية لانخفاض الغضروف العنقي.

تم تصميم هذا العمل لتحديد ما إذا كان يمكن علاج الغضروف العنقي المتدلية الجانبية الكبيرة بدون جراحة بأمان وتحفظ مما يؤدي إلى تحسن سريري وإشعاعي.

المرضى والأساليب : وقد جمعنا استباقياً البيانات من ٤٨ مريضاً تم متابعتهم في عيادة المرضى الخارجيين بجامعة القاهرة وقسم جراحة المخ والأعصاب بجامعة بنى سويف في الفترة من مارس ٢٠١١ إلى مارس ٢٠١٤ خلال هذه الفترة خضعت جميع الحالات لتقييمات سريرية وتصوير وتلقينا علاجاً طبياً متقطعاً. كان المرضى (MRI) بالرنين المغناطيسي المختارين يعانون من ألم عضدي شديد في العرض الأول ولكنهم بدأوا في إظهار تحسن سريري على الرغم من انتقال القرص من جانب واحد واضح في التصوير الأولى. تم استخدام مقياس كارنوفسكي لقياس الوظيفة والتغيرات في الأداء.

أظهرت المتابعة الأولية خلال ثلاثة وستة أشهر استجابة إيجابية لدى ٤٤ مريضاً (٩١.٦٪). كشفت المتابعة في متوسط ١٢ شهراً أن ٤٢ مريضاً (٨٧.٥٪) كان لديهم إعادة تقييم كاملة وحفاظة. ولم تحرز سوى ٦ حالات تقدماً مرضياً ويلزم التدخل الجراحي.