Cervical Disc Disease in Geriatric Patients: A Comparison Study

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ABSTRACT

Aim: *Cervical disc disease (CDD) is a common clinical entity. This is a retrospective comparison study of surgical CDD outcomes in 285 geriatric patients (age > 65) and 2715 non-geriatric patients (age < 65).*

Methods: *The geriatric group consisted of 146 men and 139 women, with mean age of 70.4 years.*

Results: *Geriatric patients, when compared to non-geriatric patients, were more likely to present with chronic, multi-level, severe radiculopathy and myelopathy. Patients > 65 years old required more instrumentation use than patients < 65 years old.*

Conclusion: *Overall outcomes were less favorable among geriatric patients, with significantly lower percentage of excellent/good outcomes, significantly greater percentage of poor outcomes, and more frequent clinically relevant recurrence. In addition, length of hospitalization was significantly greater in the geriatric patient group.*

Keywords: *Geriatric, radiculopathy, myelopathy, spinal cord diseases, surgical outcomes.*

INTRODUCTION

Cervical disc disease (CDD) is a common clinical entity. Majority of patients with CDD can be treated non-operatively (1). Despite being well described in the general population, CDD has not been well characterized in geriatric patients (2,3). CDD in older patients tends to have different characteristics than in younger patients. In contrast to the "soft" disc herniation in the younger group, geriatric patients tend to have more "hard" disc herniations and myelopathy (4). This report compares surgical outcomes of 285 geriatric patients versus the 2715 patients <65 years of age, with the aim of providing useful clinical information to general practitioners.

MATERIAL AND METHODS

This is an historical cohort study of 3000 CDD patients between 1974 and 2001. Two hundred eighty-five patients were 65 y/o and older (the geriatric subset, or GP). The remaining 2715 non-geriatric patients (NGP) constituted the comparison subset. All patients were diagnosed clinically, with confirmatory preoperative magnetic resonance (MR) scanning, and/or myelography with post-myelogram computed tomography (CT) scan.

All patients in this study had undergone a failed trial of conservative therapy (constituting approximately 20% of all patients with CDD treated by our group over the last 27 years). Each patient consequently underwent a surgical procedure (anterior cervical discectomy without fusion, anterior cervical discectomy with fusion, anterior cervical discectomy with fusion and plating, posterior cervical discectomy, multi-level posterior laminectomy, or channel vertebrectomy with fusion and plating). Specific indications for specific procedures, the use of plating, and anterior or posterior approach have been described elsewhere (5-7).

Patient outcomes were graded using the Odom criteria (6), where excellent/good outcome indicates complete relief of symptoms with return to full activity, fair outcome indicates clinical improvement with persistent limitation of activity, and poor outcome represents no improvement or further deterioration. Statistical methods included Pearson's chi-square test for categorical data and Student's t-test for continuous data. Significance was set a $p< 0.05$.

RESULTS

Two hundred eighty-five GP with surgical CDD were compared to 2715 NGP. The geriatric sample constituted 146 men and 139 women (mean age 70.4±4.79, range 65-84). Both the GP and the NGP sample had slight male predominance (overall 54% male).

GP had longer duration of symptoms and were more likely to have progressive myelopathy as compared to NGP. Majority of GP had multi-level involvement (52%), in contrast to NGP, in whom single-level involvement predominated. There was a significant difference between GP and NGP in terms of distribution of involved levels (Table 1).

Most GP had anterior cervical discectomy with interbody fusion or anterior discectomy without fusion. Use of instrumentation was more common in the GP.

Table 1. Side by side comparison of geriatric and non-geriatric samples.

	Geriatric (n= 285)	*Non-geriatric (n= 2715)*	*Significance (test used)*
Duration of symptoms			
< 6 wks	*81 (28.4%)*	*1252 (46.1%)*	*p< 0.001*
6 wks-6 mths	*84 (29.5%)*	*844 (31.1%)*	*(χ^2) **
> 6 mths	*120 (42.1%)*	*619 (22.8%)*	
Outcome (at 9 months mean follow-up) by criteria of Odom et al (6)			
Excellent/Good	*185 (64.9%)*	*2422 (89.2%)*	*p< 0.001*
Fair	*62 (21.8%)*	*208 (7.7%)*	*(χ^2)*
Poor	*38 (13.3%)*	*85 (3.1%)*	
Level of involvement			
Multiple	*148 (51.9%)*	*774 (28.5%)*	*p< 0.001*
C4	*19 (6.7%)*	*35 (1.3%)*	*(χ^2)*
C5	*32 (11.2%)*	*122 (4.5%)*	
C6	*40 (14.0%)*	*806 (29.7%)*	
C7	*32 (11.2%)*	*904 (33.3%)*	
C8	*14 (5.0%)*	*74 (2.7%)*	
Myelopathy	*67 (23.5%)*	*269 (9.9%)*	*p= 0.003 (χ^2)*
Use of instrumentation	*26 (9.1%)*	*71 (2.6%)*	*p= 0.010 (χ^2)*
Clinical recurrence	*25 (8.8%)*	*121 (4.5%)*	*p= 0.024 (χ^2)*

* χ^2= *Chi-square test.*

Table 2. Listing of major postoperative complications.

	Geriatric (n= 285)	Non-geriatric (n= 2715)
Infection (incisional)	3 (1.1%)	12 (0.5%)
Subluxation	7 (2.5%)	40 (1.5%)
Hoarseness	5 (1.8%)	44 (1.6%)
Residual pain	20 (7.0%)	136 (5.0%)
Residual paresthesias	6 (2.1%)	51 (1.9%)
Residual weakness	10 (3.5%)	71 (2.6%)

There were fewer excellent/good results, and more fair and poor results among GP. Recurrence rates were also higher in GP (Table 1). The in hospital length of stay was greater for GP than for NGP (4.6 ± 3.7 days versus 2.3±1.8 days, p= 0.004). Complication rates for GP were higher than for NGP (Table 2). Mortality included one patient in the GP group, with no deaths noted in the NGP group.

DISCUSSION

Cervical disc disease (CDD) in GP is of great importance to physicians treating the rapidly growing geriatric segment of population because of potentially devastating consequences of delayed diagnosis and treatment of CDD (7).

This study indicates that CDD in the GP tends to be more severe than in patients < 65 years of age. The significantly longer duration of symptoms among GP before initial presentation may be due to multiple factors, including altered pain tolerance and presence of various co-morbid conditions (8-10). At the same time, longer time to presentation may be in part responsible for the greater severity of CDD at diagnosis.

GP in this study tended to have worse outcomes than NGP. This could be due to both more severe disease on initial presentation, as well as presence of co-morbidities and decreased physiologic reserve (10). This also ties into the fact that GP in our study stayed in the hospital longer after surgery and had more postoperative complications.

Despite the fact that most patients in our practice (80%) were treated conservatively and did not require surgery, the remaining 20% had either refractory radiculopathy and/or progressive myelopathy and required operative intervention. Although studies of conservative treatment versus surgery in spondylotic cervical myelopathy demonstrate mixed results, we believe that the operating surgeon's clinical experience and familiarity with a particular approach may be the most important determinants of successful outcome (5,11).

Limitations of this study include its retrospective nature and lack or randomization to any particular procedure group. Its strengths include large sample size and consistency among operating surgeons/techniques. Our goal was to report operative results of CDD as they relate to the geriatric population, hoping to provide useful clinical information to general practitioners who are likely to encounter geriatric CDD patients.

Older patients in our study had worse surgical outcomes and longer postoperative hospital stay. When compared to patients < 65 y/o, geriatric CDD patients had greater duration of symptoms, multi-level involvement, more severe radiculopathy and/or progressive myelopathy, and required greater use of instrumentation techniques for spinal stabilization. Patients >65 y/o had more frequent recurrent CDD symptoms requiring medical and/or surgical management.

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