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Cervical Spondylitic Myelopathy: Is Surgery (Always, Usually, Ever) the Best Choice?

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With the results of the recent RAND health insurance experiment, we've seen a number of articles published concerning the relative efficacy of spinal manipulation in general and chiropractic in particular. In essence, these articles reveal, directly and indirectly, that chiropractors have finally been vindicated. In other words, chiropractic works. Meanwhile, of collateral interest are a number of incisive articles and editorials, authored by allopathic physicians, which have effectively exposed the bare bones of some of medicine's failures in dealing with common types of low back pain seriously plaguing our citizens. I will review these revelations in a forthcoming article. I mention these things not out of jingoism but rather to illustrate how, day by day, the playing field becomes more level. And perhaps some day we won't even think of it as a playing field.

Over the years research has continuously proven that beliefs, once considered immutable, are in fact subject to change. Case in point: What to do for cervical spondylitic myelopathy (CSM), which is compression of the cervical spinal cord by local spondylitic changes? Traditional wisdom has held that laminectomy is the only true solution to the problem. In fact, as pointed out in a recent paper by Lewis Rowland, MD, surgery is a major entrepreneurial endeavor for neurologists, neuroradiologists, neurosurgeons, and orthopedic surgeons.¹ The inexorable progressive course of the disease would seem logically to argue for timely decompressive surgery and, for this reason, a controlled therapeutic trial would be unethical. These physicians, Rowland notes, have a vested interest in perpetuating this line of reasoning. To date there have not been any well controlled trials in the surgical management of CSM. But are the traditional assumptions really valid? Rowland calculated that about 15,000 of the 250,000 laminectomies performed each year in the US are for cervical myelopathy. The bill is estimated to be \$600 million (not including time lost from work). Big business indeed. Rowland, who you may remember as an author of Merritt's Textbook of Neurology^{2,3} or as the 1989-1991 president of the American Academy of Neurology, takes a candid and incisive look at

the current state of affairs in the surgical management of cervical spondylitic myelopathy -- an article which seemed to me so revealing and thought provoking that I decided to review it with you.

Historically, it was Victor Horsely,⁴ who is credited with performing the first cervical laminectomy. The year was 1892. During the 1930s disc surgery became increasingly more popular, and by 1935, cervical laminectomies were becoming commonplace.⁵ Rowland provides us with the following definition of CSM:

"Cervical spondylitic myelopathy is a condition in which the spinal cord is damaged, directly by traumatic compression or indirectly by arterial deprivation, venous stasis, or other consequences of the proliferative bony changes that characterize spondylosis."

Wilkinson⁶ described autopsy specimens and noted permanent impressions corresponding to spondylitic protrusions and found, at the level of lesion and caudal to it, degeneration of the lateral columns, whereas cephalad to the lesions, she found degeneration of the posterior columns.

The fact that myelography only rarely discloses a complete block of the contrast agent, and the fact that decompressive surgery does not always relieve the patient of symptoms, are incongruities which have been dealt with in several ways. For example, it's been suggested that cord compression might be indirect, such as when the head and neck flex and change the position of the cord within the spine. Also, necrotic changes to the cord might follow changes in blood flow.

Although generally confused or felt to overlap, the clinical condition of radiculopathy and myelopathy are quite distinct. Neck and arm pain for example, while common in radiculopathy, occur in only 10-19 percent of case of myelopathy.^{7,8} Spastic paralysis is the most reliable finding and, of those patients, the syndrome of "numb, clumsy hands" is the one clue that increases the likelihood of CSM.⁹⁻¹² Naturally, sudden quadriplegia or paraplegia following a fall in an older patient should raise the suspicion of spondylitic myelopathy. Young adults with spinal stenosis may be subject to the same fate, particularly in trauma involving flexion and/or extension of the neck.

My father used to tell me that figures don't lie but liars can sure figure. In medical and chiropractic writing we might charitably say that figures can be misleading. Readers of literature describing nearly miraculous results of manipulation or surgery should be watchful for pitfalls in study design or outcome measurement which might bias the findings. High rates of success are often reported without reference to the methods used to determine success. As Rowland points out, advocates of surgery have taken credit even in instances

where the operation was unsuccessful based on the thinking that the condition is otherwise inexorably progressive; the assumption that some or all of the progression may at least have been halted. Rowland notes this assumption can also be challenged.

Table I compares the reported outcomes for laminectomy, anterior surgery and no surgery in a number of studies. Crude analysis of this data shows that 40 percent of reported cervical laminectomy surgery outcomes showed either no change or were worse, whereas 47 percent of the anterior surgery group fit into these same categories. This is compared to the group that had no surgery (56 percent).

Table 1

Surgical Results in CSM

Procedure	# of Patients	Percentage of Patients		
		Better (%)	No Change(%)	Worse(%)
Laminectomy				
Gonzalez-Feria ¹³	20	85	5	10
Fager ¹⁴	66	59	32	9
Scoville ¹⁵	36	65	35	0
Bishari ¹⁶	59	61	25	13
Pipegras ¹⁷	36	44	53	3
+ dentate section	44	43	52	3
Total	261	60	34	6
Anterior Surgery				
Phillips ¹⁸	65	74	12	14
Nurick ¹⁹	123	55	41	4
Lunsford ²⁰	32	50	0	50
Wohlert ²¹	112	47	?	?
Gregorius ⁸ + posterior	53	33	43	22
Total	385	52	24	23

No Surgery

Clark, Robinson ⁷	22	64	36	0
Bradshaw ²²	26	46	23	31
Lees, Turner ²³	28	61	25	14
Robert ²⁴	24	29	37	33
Nurick ¹⁹	36	22	44	33
Total	136	44	33	23

Adapted from references 1,27

Rowland now restates the problem. If, as the more favorable reports suggest, two-thirds of patients improve following surgery, is this better than the natural history of the disease? And is the improvement due to the surgery or the resulting rest, immobilization, emotional support and physiotherapy? On the other hand, if the more pessimistic reports are correct and the outcome is only at the 50:50 level, should anyone have the operation? An important question which was not addressed by Rowland would be: What role does the spinal manipulation and adjunctive regimen offered by chiropractic physicians have to play in all of this? As incisive and undisguised as this article was, I was mildly surprised that the traditionally forbidden "no doctor's land" of conservative, non-medical, non-surgical care was not to be broached. Such apostacy will probably have to wait until we have done the research ourselves.

In the meantime, following up on the question of the natural history of the disorder, Lees and Turner²³ followed 22 patients for more than 10 years and 10 others for less than 10 years (See Table 1). A surprisingly large number of those followed over a longer period actually improved without treatment.

Unfortunately the diagnosis of CSM is far from certain. For example, by age 59, 70 percent of women and 85 percent of men have radiographic evidence of spondylosis.²⁵ After age 70 these figures are 93 percent and 97 percent respectively. Pallis et al.,²⁶ found abnormal neurological signs in 50 percent of asymptomatic people with radiographic signs of canal narrowing and in 75 percent of people older than 65. One must also entertain the possibility of other diseases when spastic paralysis is found. Amyotrophic lateral sclerosis (ALS), multiple sclerosis (MS), primary lateral sclerosis, and syringomyelia have all been misdiagnosed as cervical spondylitic myelopathy. MRI, which has become the veritable Swiss army knife of diagnosis, may not always be reliable as a tool in the diagnosis of spondylitic myelopathy since many MRI

"abnormalities" can be seen in asymptomatic individuals. MRI is helpful though in evaluating patients suspected of having MS.²⁷

So what do we need? Rowland has argued that we need a well controlled clinical trial with appropriate selection criteria (i.e., exclude ALS and MS), reasonable outcome measures, and the inclusion of a manipulative therapy group (okay, the manipulative therapy part was mine). That way we could evaluate and compare the outcomes of the "no treatment," "chiropractic treatment," and "surgical treatment groups." Given the fact the disease is not always progressive (or at least not in an aggressive sense) and that a significant number of patients improve without any treatment, a reasonable starting hypothesis for such a trial would be that many patients who would otherwise meet the existing criteria for surgical intervention for CSM would fare as well or better in the long term without surgery, and that another subgroup of these patients would benefit more from chiropractic management than from no treatment or surgical treatment. What do you think?

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