The Results of “Lumbar Disc Surgery” Following Unsuccessful Chemonucleolysis*

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Summary

A group of 100 patients submitted to microsurgical treatment for herniated lumbar disc following unsuccessful chemonucleolysis with chymopapain were retrospectively compared to a statistically comparable group of patients primarily submitted to microsurgery. This comparison demonstrated that previous unsuccessful chemonucleolysis has no influence on either the short-term or the long-term results of subsequent microsurgery.

Keywords: Chemonucleolysis; lumbar disc surgery; disc herniation.

Introduction

The indications for chemonucleolysis and for open surgery in the treatment of herniated discs are not the same. While chemonucleolysis should be used only in cases of so-called contained discs, the indication for open surgical treatment is broader and comprises, in addition, cases in which the root compression is caused by a sequestrated disc, by narrowing of the lateral recess, by vertebral instability, and by other causes that cannot be eliminated by enzymatic activity. The inability to detect such causes with a sufficient degree of certainty despite the use of modern imaging (including MRI), and dynamic testing (discal manometry), is responsible for the failure rate of roughly 20% observed in most large series of patients treated by chemonucleolysis reported in the literature (McCulloch11; Fraser7; Brock3; Javid9; Nordby12). These patients, in whom chemonucleolysis has failed to relieve root compression, are usually submitted to subsequent open surgery, a treatment to which they would have been submitted primarily if one had had the correct diagnosis of the cause of the root compression.

The question, then, arises as to whether the results of open surgery in this group of patients (in whom chemonucleolysis failed) differ from the results of primary lumbar disc surgery performed on an otherwise comparable group of patients. The present paper seeks an answer to this question, based on the retrospective analysis of a group of patients submitted to open surgery following failure of chemonucleolysis.

Material and Methods

Between February 6, 1983, and February 6, 1986, 519 patients were submitted to chemonucleolysis with chymopapain in the Department of Neurosurgery, Universitaetsklinikum Steglitz, Free University of Berlin. Of these patients, 100 (19%) were submitted to subsequent open surgery because chemonucleolysis had failed to produce the desired result. This rate corresponds to the data in the literature (McCulloch11; Fraser7; Brock3; Javid9; Nordby12). All patients received a detailed questionnaire about their clinical condition prior to chemonucleolysis, following chemonucleolysis, also prior to surgery, and following surgical treatment post chemonucleolysis. Questions included detailed information on the following points:

1. Frequency, intensity and distribution of pain,
2. Use of analgesics and other drugs,
3. Need for physiotherapy,
4. Intensity of motor dysfunctions,
5. Intensity and distribution of sensory disturbances,
6. Working capacity and changes in professional activity,
7. The patient’s evaluation of the result of surgery post chemonucleolysis.

The control group consisted of 100 patients primarily submitted to open surgery for the treatment of lumbar disc herniation during the same period of time. These 100 patients were chosen so as to match the first group (open surgery following chemonucleolysis) by age, sex, afflicted level and operative technique used at surgery. The control group did not comprise any patient submitted to prior chemonucleolysis or lumbar disc surgery. Patients with spinal trauma,

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vertebral malformations, and gross instability were also eliminated. For the sake of simplicity, the group of patients submitted to surgery following unsuccessful chemonucleolysis will be referred to as “CNL-group”, while the group of patients submitted to primary open surgery will be called “control group”. All 100 patients of the control group received a questionnaire similar to that sent to the patients of the CNL-group.

Results

Eighty-one patients of the CNL-group and 83 of the control group returned the questionnaire duly filled in. There were no significant differences between these groups as concerns age and sex distribution (Table 1). There were also no significant differences in the levels treated (Table 2): 107 discs had been submitted to chemonucleolysis in 81 patients of the CNL-group, while 101 discs had been subjected to primary open surgery in 83 patients in the control group. As shown in Table 3, also the side and the level of the surgical procedures performed following unsuccessful chemonucleolysis are very similar to those in the group submitted to primary surgery. The same applies to the type of procedure performed (Table 4).

The time elapsed between chemonucleolysis and subsequent open surgery in the CNL-group ranged from 2 to 553 days (average: 55 days) (Table 5). The majority of patients (n = 55) was operated on within the first 2 months following unsuccessful chemonucleolysis.

In the CNL-group, bony root compressions were more frequent than in the control group. These findings are not surprising, since undetected bony compression rather than “undissolved” disc material is the main factor responsible for failure of CNL. In line with this is the fact that the number of discogenic root compressions found at surgery was larger in the control group (Table 6).

A comparison of the main symptoms before and