Introduction: Chemonucleolysis Symposium

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With chymopapain coming to the fore upon the FDA approval of Chymodactin® on November 10, 1982, there has been a renewed interest in the facts and fallacies that have surrounded this enzyme for 20 years. Lyman Smith, MD, of Elgin, Illinois, presented his initial clinical study in the JAMA in 1964, originally beginning with animal experiments in 1959. His work determined chymopapain to be the proteolytic enzyme of choice among those available that he tested, since it is the least toxic and is able to digest the mucoprotein of the nucleus pulposus while sparing the collagen of the annulus.

This symposium is designed to give an overview of important aspects of the basic characteristics of chymopapain, as well as up-to-date clinical observations from the use of the purified formulation.

Daniel McDermott, PhD, vice president for medical research of Smith Laboratories Incorporated, presents some background on the development of Chymodactin®, as well as the mechanism for its clinical assessment and approval along with some current clinical data. His guidance and surveillance of the clinical studies that led to the release of Chymodactin® for general clinical use have been most important.

An early investigator in the use of chymopapain, Lee T. Ford, MD, of St. Louis, Missouri, describes his results in the duplication of the epidural application in cats reported by Norman C. Sheeley, MD, then of Cleveland, Ohio. Counteracting the results of the experiments reported by Dr. Sheeley was most important in the clinical presentation of chymopapain, since an adverse effect on epidural application would, if true, pose a special hazard. Allaying such fears is the special contribution of Dr. Ford’s carefully performed experimental research.

The mechanism of action of chymopapain is addressed in research conducted by David Spencer, MD, of Peoria, Illinois. The prompt narrowing of the intervertebral space to allow decreased nerve root tension is presented as a prime factor responsible for prompt clinical relief in many patients. The decreased volume of the intervertebral contents by the sudden loss of mucoprotein’s water-binding capabilities due to the action of chymopapain has been previously presented by Dr. Ivan Stern as basic to this action.

Variations in clinical application of Chymodactin® by the single-needle technique under general anesthesia and by a double-needle technique using local analgesia are respectively presented by Henry Apfelbach, MD, of Forest Park, Illinois, and Curtis Spencer, III, MD, of Long Beach, California, each having had long experience upon which to draw. Helpful tips are provided by each, who have varied their own techniques over the years as dictated by special circumstances encountered.

Some would view chemonucleolysis and discectomy or laminectomy as competitive alternatives in the treatment of a herniated nucleus pulposus. Eugene Dabezies, MD, of New Orleans, Louisiana, presents his conclusion that chemonucleolysis should precede open surgery because of reproducible qualitatively better results at the 70th percentile that are less stressful to the patient in the process, based on a clinical experience of over 400 patients. With ideal selection of patients for either therapy, one should anticipate very similar results except for the superiority of discectomy in the sequestrated fragment isolated from access by the enzyme. The value of discography is described, as well as the failure of intradiscal narrowing in his series to be of any prognostic significance. The most significant superiority of intradiscal therapy with chymopapain lies in the unique lack of fibrosis secondary to this procedure as compared to the sometimes compromised open surgical results from such an undesirable response.

The most important complication encountered in the use of chymopapain is anaphylaxis. An understanding of this entity and a regimen to make such allergic response manageable is presented by Walter Whisler, MD, of Chicago, Illinois. Since this allergic response can vary from a slight delay in proceedings to a life-threatening episode, a thorough understanding of anaphylaxis and its treatment
is essential. The concept of pretreatment with \( H_1 \) and \( H_2 \) receptor blocking agents has added to the armamen-
tarium in the therapy of this syndrome, and appears to make untoward reaction more manageable.

A unique experience of followup on 231 persons treated as outpatients is reported by John A. McCulloch, MD, from his extensive experience with discolysis. He empha-
sizes discrimination in patient selection as being of prime importance in obtaining a satisfactory outcome, and points out the increasing importance of computerized axial tomography scanning as a diagnostic tool. This aid, where appropriate, could make chemonucleolysis a com-
pletely outpatient procedure. Postoperative spasms, often very painful, are the concern of most that prevents selec-
tion of disc injection as an outpatient or daycare pro-
cedure. It is impressive that selection in this group of Dr.
McCulloch’s patients was of sufficient discernment to allow 96% patient acceptance.

We hope that this symposium will provide information that will allow you to understand the approved application of chymopapain (Chymodiactin\textsuperscript{\textregistered}) in the treatment of a lumbar herniated nucleus pulposus with radiculitis.

References