

## THE USE OF DEMEROL IN PATIENTS SENSITIVE TO MORPHINE \*

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Received for publication August 11, 1947

THE intolerance of many patients to morphine has been observed frequently by those who use this narcotic as a therapeutic measure for postoperative pain.

In a previous investigation (1), one of us (J. D. S.) tested 103 tuberculous patients for morphine sensitivity. These patients were to have surgical collapse therapy. Morphine sulfate, in a single dose of 1/6 grain (10 mg.), was administered one-half hour to one hour after a full meal while the patient was at rest in bed. In 43 per cent of those tested, nausea or vomiting was observed. Dilaudid hydrochloride subsequently was administered to 32 of the patients sensitive to morphine; 24 of this group continued to exhibit symptoms of intolerance. Sensitivity to morphine, producing nausea or vomiting, was considered to complicate the postoperative period to a considerable degree.

In 1943, Rovenstine and Batterman (2), in a discussion of demerol (1-methyl 4-phenyl-piperidine 4-carboxylic acid ethyl ester hydrochloride) which had been used extensively in Europe, suggested this drug as a suitable substitute for opiates in preanesthetic medication.

Demerol is a white crystalline substance soluble in water as the hydrochloride salt. Its actions are similar to those of atropine and papaverine in that dryness of the mucous membranes and a spasmolytic action on smooth muscles are produced (3).

It was decided to test the use of demerol in surgical patients sensitive to morphine.

### PROCEDURE

Morphine sulfate, 1/6 grain (10 mg.), was administered subcutaneously as a test dose several days before contemplated elective operations in a group of 105 patients. These patients had a total of 471 operations distributed as follows: 420 stages of thoracoplasty, 22 extra-pleural pneumonolyses, 6 cavernostomy stages and one appendectomy. The patients were not informed of the nature of the injections. If

\* Demerol used in this study supplied in part by the Department of Medical Research of the Winthrop Chemical Company.

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nausea, vomiting or central nervous symptoms appeared, each patient was then tested later with demerol, 100 mg.

It is acknowledged that factors other than narcotics may produce nausea and vomiting postoperatively, particularly the anesthetic, reflex action and operative trauma. Sodium pentothal, in combination with oxygen, was used in the majority of our patients. Inhalation anesthesia was given only in cases in which pentothal was contraindicated, principally for extrapleural dissections. Operative trauma was probably minimal since there was no operative mortality in this group of patients.

### RESULTS

Of the 105 patients tested preoperatively with morphine, 86 (81.9 per cent) showed no intolerance. Of these 86 patients, 58 completed their entire postoperative course with morphine; 28 became nauseated or vomited after one or more doses of morphine. Eleven of these latter 28 completed their operative procedures with only minimal symptoms referable to morphine; in 9 there were no symptoms of sensitivity when the medication was changed to demerol; in the remaining 8 cases, the anesthetic agent was believed to be the cause of the nausea and vomiting.

Preoperatively, 19 patients exhibited definite intolerance to morphine and received test doses of demerol, 100 mg. Of these, 15 showed no evidence of sensitivity to demerol and were continued satisfactorily on this medication throughout their postoperative periods; 4 patients had definite symptoms of intolerance to demerol with nausea and vomiting. One patient in this latter group also had dizziness and excitability lasting several hours. Codeine sulfate, one grain (0.067 Gm.), with barbiturates, was given to these 4 patients for postoperative medication.

With each successive stage in the thoracoplasty cases, those patients who were sensitive to morphine showed an increasing intolerance to this narcotic. These patients were given demerol as soon as morphine sensitivity was suspected. In no instance was it necessary to administer intravenous fluids to maintain adequate water balance because of postoperative nausea and vomiting.

### SUMMARY

Clinical studies of 105 patients having a total of 471 operative procedures were carried out with regard to the selection of analgesics for the control of postoperative pain. Of the 105 patients, 28, or 27 per cent, exhibited moderate to marked nausea or vomiting attributable to morphine sensitivity. When demerol hydrochloride was used in place of morphine for these patients, only 4 continued to have nausea or vomiting.

Our results indicate that demerol may be an acceptable substitute for morphine when an intolerance to the latter drug exists.

The authors acknowledge with gratitude the assistance of Evelyn Maier, R.N., in keeping and compiling the records used in this study.

#### REFERENCES

1. Steele, J. D.: The Narcotic as a Factor in Postoperative Nausea and Vomiting, *Anesthesiology* 4: 430-432 (July) 1943.
2. Rovenstine, E. A., and Batterman, R. C.: The Utility of Demerol as a Substitute for the Opiates in Preanesthetic Medication, *Anesthesiology* 4: 126-133 (Mar.) 1943.
3. Younkman, F. F.; Noth, P. H., and Heet, H. H.: Demerol: A New Synthetic Analgetic Spasmolytic and Sedative Agent, *Ann. Int. Med.* 21: 6-16 (July) 1944.

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#### APPOINTMENT OF COMMISSIONED OFFICERS IN THE MEDICAL CORPS AND DENTAL CORPS OF THE REGULAR NAVY

The statutory authority contained in Public Law 365—80th Congress, Title II (Army-Navy-Public Health Service Medical Officer Procurement Act of 1947) makes it possible now for civilian doctors to become commissioned officers in the regular Navy, provided they meet the professional and physical qualifications. This law is unique in that it does away with, for the first time, the age limitation of thirty-two years of age and permits doctors in civilian practice to enter the Navy and be commissioned with the rank up to and including Captain. The law considers all strata of the medical profession, internes, residents, reserves, former medical officers who have resigned, and present practicing physicians.

In order to make application a doctor must be a citizen of the United States, a graduate from a Class "A" medical school and have served at least one year's internship in an approved hospital. Candidates will then be judged on a number of qualifications such as being a member of a specialty board, [his] teaching connections, the number of years of professional or scientific practice, hospital or laboratory connections, a statement of military service, etc.

The allocation of rank to successful candidates will depend upon their academic age, professional standing, and experience in the medical field. Successful candidates will then be integrated in line with medical officers of the regular Navy and assigned running mates accordingly. This means that they will be eligible for promotion along with their fellow officers of equal rank.

This law offers a fine opportunity for civilian doctors to make a career in the regular Navy and to enjoy its professional advantages as well as its retirement benefits. Doctors interested in such a career should write to the Bureau of Naval Personnel, via the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.