CHEMOPALLIDECTOMY AS A TREATMENT FOR PARKINSON’S DISEASE
EVALUATION OF RESULTS IN 118 PATIENTS
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It was not until Cooper in 19532 introduced ligation of the anterior choroidal artery and later the surgical procedures called chemopallidectomy and chemothalamectomy that there was a good, relatively safe and simple surgical treatment for Parkinson’s disease with an otherwise hopeless prognosis. Previous attempts by neurosurgeons to relieve the disabling symptoms of this disease had been directed mainly toward interruption of the motor pathways on their way from the cerebral cortex to the spinal cord.1,11,15 Section of these pathways had been performed at almost every level, usually resulting in various degrees of hemiplegia; therefore, these procedures were used only in a few severe cases. During the past decade the basal ganglia have been the target for some surgical procedures developed for relief of the symptoms of Parkinson’s disease,12 and some elaborate stereotactic methods have been worked out.14 However, they have been either too dangerous or too complicated, or without enough beneficial effect on the patients’ symptoms to become standard procedures in the neurosurgical armamentarium.

Cooper’s new surgical treatment for Parkinson’s disease, which was simple, relatively safe and which led to results that could be reproduced by others, was received with great interest. Cooper came on his idea by an accident,6 but he had the ability to develop this accident into a very useful treatment3,4 and to elaborate it further into new ingenious stereotactic methods5,6—the so-called chemopallidectomy and chemothalamectomy. Although Cooper has reported and discussed the results of that treatment in more than 800 patients suffering from Parkinson’s disease,7–9 there have been few reports of the treatment by other surgeons, and all the reports have contained a minimum of statistical details. It is the purpose of this paper to present and analyze the results in 118 patients having Parkinson’s disease, who were treated after the technique outlined by Cooper with only a few minor and probably insignificant variations.

SURGICAL TECHNIQUE

The surgical technique has been so well described by Cooper and his associates that it need not be presented in detail here. The terms chemopallidec--
tomy and chemothalamectomy refer to chemical destruction of the areas in the globus pallidus and the thalamus, respectively. The most widely accepted means to accomplish this has been by the injection of an alcohol solution into the area under roentgenographic control. It is likely, however, that some of the neighboring structures are destroyed by the injection in at least some cases. We have seen such destruction at necropsy of patients who died shortly after surgery. Similar necropsy findings were reported* in the case of one patient who had lived for several years after a successful chemopallidectomy and then died from an intercurrent disease.

The alcohol solution, Etapolin prepared by Ciba, in most of our cases has been mixed with 15 per cent Pantopaque in order to visualize the spread of the solution on postoperative roentgenograms. In most cases the mixture remains rather localized around the tip of the needle except for some that leaks up along the needle track to the cortex. We have used the balloon type of cannula described by Cooper in only a few cases. We have found that adequate filling of the ventricles is more likely to occur when air is injected into the ventricles through the same burr hole in the skull as will be used for the injection of alcohol than when lumbar pneumoencephalography is performed. This method of injection of air also causes less distress to the patient, such as headache and nausea, than does pneumoencephalography. In our experience, the alcohol solution that is later injected has never been known to leak into the ventricles through the needle track.

In our patients the injection of the alcohol solution at the time of surgery generally is supplemented by two or three additional injections during the first week to 10 days after surgery. These additional injections are believed to be important because we have seen patients in whom one injection produced such a perfect result that the later injections were cancelled, and in whom the symptoms subsequently recurred necessitating a second operation on the same side.

PRESENT SERIES

The present series includes 118 patients having Parkinson’s disease. Also treated with chemopallidectomy were 3 patients having Huntington’s chorea, 2 having cerebral palsy, 2 having muscular dystonia, and 1 having intention tremors, but evaluation of the results is not included in this study. The 118 patients having Parkinson’s disease underwent 136 procedures; 13 patients had bilateral procedures and 5 had two procedures performed on the same side because of early recurrence of symptoms. The patients ranged in age from 35 to 74 years, with an average age of 57 years. The patients have been followed for from 1 to 26 months, with an average follow-up time of 10 months.

RESULTS

Deaths. Fifteen patients died; 10 during the immediately postoperative period and 5 from 1 week to 7 months after discharge from the hospital. Of

* At the Symposium on Chemopallidectomy arranged by Doctor Cooper, in New York, May 1958.