TRANSORBITAL LEUKOTOMY FOR THE PAIN OF MALIGNANT DISEASE

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THE groundwork for all psychosurgery was laid by Egas Moniz.[1] His original monograph, published in 1936, revealed that for some years he had been considering the possibility of interrupting projection fibers from the frontal lobes, as a therapeutic measure in certain psychoses. The first actual operations in this region were conceived and carried out by Moniz and Lima, and from their work have developed all the more recent and elaborate technics.

To Freeman and Watts,[2] however, must go much of the credit for stimulating research along the lines of surgery on the frontal lobes, at least in the United States. The technic of prefrontal lobotomy described by them, together with their encouraging results, gave a tremendous impetus to the study of frontal lobe function from the surgical aspect, and brought psychosurgery to its present status.

Most of the early work was done, of necessity, in the treatment of mental disease, but it became evident to the observers who were following patients postoperatively, that there had been a definite change in the attitude of many patients with severe pain, as shown by the lessened emotional response to their suffering. Consequently, operations on the frontal lobes for the relief of intractable pain became common, and there is now a series of reports[3-10] in the literature concerning the results of these procedures. The technics of operation have varied from the blind section originally described, through various stages to cortical ablation (gyrectomy or topectomy), including cortical undercutting[11] and prefrontal lobotomy under direct vision.[12,13] Selective excision of the postcentral sensory cortex[14] does not really fall into this category, but is one other step in the attempt to treat pain which has failed to respond to less drastic measures.

Division of white fibers in the frontal lobes via the orbital plate was first proposed and carried out by Fiamberti,[15,16] but much of the recent work on this approach to the problem must be credited to Freeman.[17] Transorbital leukotomy is a method of undercutting the cortex of areas 9 and 10 (Brodman) and causes little constitutional upset to the patient. The technic, which has been described elsewhere,[18,19] does not appear to have gained tremendously in popularity. However, it does have a certain advantage which commends it to the surgeon, namely, that it is a relatively minor procedure which can be tolerated by patients too sick to undergo major surgery. For this reason and in spite of the fact that Freeman reported in his first 100 cases that the effects of the operation on pain of long duration were not dramatic, it was felt that it should be given a trial in certain selected patients. The results of frontal lobe operations on patients with intractable pain show considerable variation.

At the outset therefore, it appeared obvious that 100 per cent effectiveness could not be expected from the less mutilating and less complete section of the white fibers by the transorbital route.

The bilateral operation can be completed in 5 to 10 minutes and, although the change of personality is minimal following this procedure, there is often a definite lessening of the mental and emotional depression so often associated with the knowledge of incurable, deteriorating disease.

Another factor which we have felt to be of significance is that following operation it has, in many cases, been easier to control the patient's pain with narcotics even when the operation was not entirely successful in completely relieving the pain. This has often been pointed out in connection with leukotomies of all types, and the improved mental attitude in these patients, whether as a direct result of sectioning of the white fibers or because of reduced narcotic intake, has often been quite pronounced.

We carry out the operation under pentothal anesthesia, and give 5 Gm. of sulfadiazine intravenously after the surgery is completed, in lieu of the penicillin recommended by Freeman.

As with other forms of prefrontal leukotomy, the effect on the patient's pain and attitude toward his discomfort may not be permanent. Consequently, we have confined the use of this procedure to patients in the late stages, usually with only a few months to live, in whom a more major procedure would seem unjustifiable.

An interesting finding following transorbital leukotomy for pain is that, although the immediate effects may not be marked, within 3 to 6 weeks of operation considerable improvement may occur. This came to our attention when one patient on whom the procedure was carried out failed to obtain early relief. We planned to perform a prefrontal topectomy about 5 days after the transorbital leukotomy, but the patient developed an upper respiratory infection and was sent home for 2 weeks. During this period her condition underwent a definite change for the better, and when she returned there was such obvious improvement that further operation was contraindicated. This was not a case of malignancy, but of traumatic neuropathy, and after more than a year the patient has continued to do satisfactorily. Several other patients who have undergone a similar sequence of events have been seen.

We do not carry out transorbital leukotomy in patients with recognized cerebral metastases.

The statistics are as follows:

Number of cases	25
Results—	
Good	11
Fair	5
Poor	7
Fatal	2

A good result is classified as one in which the complaints of pain were noticeably diminished and no sedation was necessary, or in which control of pain by sedation was effected more easily following the operation. Fair results are those in which the patient postoperatively continued to require moderate sedation, but the mental attitude was improved. Poor results are those in which there was no change and heavy sedation was still required.

Of the 2 fatalities, the first was a man in whom the lesion was widespread metastatic teratoma of the testis. It was known preoperatively that, for many weeks, this patient had not been able to breathe when lying down, owing to severe enlargement of the mediastinum by metastases and also metastatic involvement of the lungs. Unfortunately, postoperatively he was placed in the horizontal position; while recovering from the anesthetic he vomited, aspirated vomitus, and died from bronchial and tracheal obstruction. The second death presumably occurred as a result of hemorrhage. The patient failed to recover from the anesthetic and died suddenly.

The only other complication in this group was a temporary cerebrospinal fluid rhinorrhea which occurred in one patient. Of the 25 patients reported, at the last estimate 19 had already died as a result of malignancies.

Discussion

In the treatment of intractable pain, which has failed to respond to more peripheral measures, many operations on the frontal lobes have been performed. The results of all these procedures appear comparable, and in our experience, transorbital leukotomy is the least traumatic, the one likely to cause the least personality change, and the one most justifiable in the terminal stages of malignant disease. By this operation, as with the other more radical procedures, apprehension may be alleviated, narcotic intake diminished, and the final weeks or months of a progressive downhill course be made more tolerable for both patient and attendants.

Summary

1. Twenty-five patients in states of terminal malignancies were subjected to transorbital leukotomy.

2. Sixteen patients were improved; 2 died and 7 remained unchanged.

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