Progress in Neurological Surgery

6

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Editorial Preface

The editors must initiate this volume with an apology to the contributors for the delay incident to the publication of their valued efforts. Over two years have elapsed since most of the chapters were written. As a number of the essayists have rightly remarked, their personal statistics at the best have become substantially augmented in the interim and at the worst their emphasis or their conclusions would be different if written today. Happily, the authors of most of the chapters on techniques of approach to the contents of the sella turcica are in the position of having made a unique species of contribution to their subject – one whose advantages and disadvantages had become crystallized to a level of reasonable stability by the time they placed their thoughts in writing for this volume.

To a greater degree than with previous volumes in the series, the authors have concentrated on describing their own work, often because there was little or no really similar work of others to record and compare. This has made it more difficult than usual for the authors to place their own work in the perspective of the entire range of procedures directed at the intrasellar and parasellar areas. Hence they have not attempted a critique of the field in the fashion carried out in the previous books in this series. This editor, however, having had the benefit of a review of the chapters as well as numerous conversations with their creators is venturing a tentative effort to suggest the special place of each of the hypophysial operations in the total therapeutic armamentarium. One might expect that the less the mechanical manipulation within the sella, the lower the stress, the morbidity and the mortality. The actual results appear to bear out this assumption. Thus the absence of all mechanical maneuvering within the sella characteristic of irradiation by heavy particles as carried out by LAWRENCE in Berkeley and KJELLBERG in Boston is accompanied by the lowest morbidity and essentially zero mortality. My own bias here is in favor of the technique of KJELLBERG, which provides the patient with the bonus of increased, sharply focused destruction permitted by using the much higher linear energy trans-

fer at the Bragg peak. Also advantageous is the absence of any radiation in the normal tissues beyond that peak. Any patient in whom prompt tissue destruction is not a major desideratum and in whom the tissue to be destroyed is not adjoining the visual pathways is the prime candidate for the heavy-particle, non-invasive approaches described by these two men.

The gradual evolution of the radiation injury is an advantage from the standpoint of decreased stress. However, it also means that the patient whose tumor is dangerously large or whose metastatic breast cancer is life-threatening cannot wait for the radiation to take effect. In such patients, whose lesions do not include a major extrasellar extension, the transphenoidal approach appears to be sufficiently stress- and risk-free compared to the transfrontal approach for the younger man to do well to master it. He is unlikely ever to get enough patients to enable him to learn how to achieve the excellent results of the few transfrontal maestros in the world. The four major transphenoidal techniques are represented by chapters from: (1) NICOLA, open operation; (2) MUNDINGER, interstitial radiation; (3) RAND, cryosurgical destruction, and (4) ZERVAS, radiofrequency thermal destruction. The demand for top notch technical skill to minimize the complications is perhaps slightly less with the tiny electrodes introduced by ZERVAS. However, all four methods require sustained attention to many fine details if the remarkable results of the experts are to be approached. The neophyte would do well to select one of the four methods and concentrate on developing real expertise in this before he seeks to branch out to one of the other tactics.

The transfrontal approach to two difficult groups of parasellar tumors – the chondromas and the chordomas – has been admirably depicted by another of the editors with a vast personal experience. But the major groups of parasellar tumors – the craniopharyngiomas, meningiomas and gliomas of the visual pathways – are probably now best handled by microneurosurgical methods. Such accounts must await the acquisition of more experience and a later volume of this series

In this and subsequent volumes the editors and authors continue to have in mind the desire to keep the whole neurosurgical fraternity up-to-date in areas in which recent progress has occurred. We shall now wish as well to provide a useful broad review of the subjects for neurosurgeons seeking specifically to pass re-qualification and re-certification examinations such as are being widely used in the United States.

February, 1975 WILLIAM H. SWEET for The Editors

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Clinical Physiology of Pituitary Tumors

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Introduction

From the clinical viewpoint, apart from neurological symptoms such as defects of the visual field, tumors of the adenohypophysis mostly result in partial hypophyseal hypofunction or, more seldom, in panhypopituitarism, i.e. total hypophyseal deficiency. In very rare cases the hypothalamus or the hypothalamo-neurohypophyseal system is also affected. Sometimes, however, all hypophyseal functions may still be intact, and the patient consults a physician for visual disturbances. In other cases a pituitary tumor may be discovered by mere chance.

In fewer cases a tumor of the anterior lobe of the hypophysis is detected owing to a syndrome of endocrine hyperfunction. Acromegaly is the most frequent symptom; the Cushing syndrome or the Ahumada Argonz del Castillo syndrome (amenorrhea with galactorrhea) is less often encountered.

In childhood, i.e. during the period of growth, and in adulthood, the consequences of an absence or excessive production of hypophyseal hormones are very different: this is the reason why the former are within the domain of pediatrics and the latter within that of internal endocrinology.

The early recognition of hypophyseal tumors, which develop almost invariably in a rampant manner, is of capital importance. With adequate therapy, often a *restitutio ad integrum* may be achieved; whereas, as a rule, irreversible damage can no longer be prevented in the case of a late diagnosis. Therefore, a thorough knowledge of signs and symptoms is essential for the specialist and for the general practitioner. Before describing the clinical syndromes of pituitary tumors, we should like to discuss the present-day status of our knowledge as to the biochemistry and physiology of the various adenohypophyseal hormones, as well as our diagnostic possibilities.