THE RESULTS OF 300 PITUITARY ADENOMA OPERATIONS (PROF. HERBERT OLIVECRONA'S SERIES)

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Between the years 1929 and 1947, 292 patients with verified pituitary adenoma were treated at the Serafimerlasaretet in Stockholm and the number of operations performed was 300. The detailed follow-up of almost all patients allows an accurate analysis of the value of these operations and of the postoperative prognosis. There is only one similar follow-up study in the medical literature, Harvey Cushing's 338 pituitary adenoma cases as reported by Henderson in 1939.

The 292 cases of pituitary adenoma observed in the Olivecrona series represented 8.9 per cent of the total number of verified brain tumors. On the other hand, the 338 corresponding cases in Cushing's series represented 17.8 per cent of a total of 1923 brain tumors—a larger percentage.

Histologically, 232 of the adenomata have been classified as chromophobe (with 246 operations); 55 as acidophil or mixed but with an overwhelming majority of the acidophil elements (52 op.); 2 as basophil (2 op.); and 3 as malignant (3 op.).

The maximum incidence of chromophobe adenomata occurred in patients between the ages of 50–54, much higher than in Cushing's series. Twenty-six patients were over 60 years of age. The age incidence of patients with acidophil tumors was lower, about 30 years of age, and only 1 of them was over 60.

In 55 (33.9 per cent) of the cases of chromophobe adenoma and in 18 (35.3 per cent) of the cases of acidophil adenoma, the patients had received varying periods of x-ray treatment during the years or months prior to operation.

The types of operations performed are recorded in Table 1. This table does not include 13 re-explorations performed shortly after primary operation for actual or suspected blood clot formation or edema of the frontal lobe. The re-explorations were followed by resection of the frontal lobe in 4 cases, a rare procedure in the primary operations. Primarily it was performed in only 4 cases, in which the approach to the big extrasellar adenomata was not possible by other means.

The surgical approach was transfrontal in 241 chromophobe and 45 acidophil adenoma cases (95.3 per cent of all operations), and transsphenoidal in 5 chromophobe and 9 acidophil cases (4.7 per cent). A fundamental difference exists, therefore, between our cases and Cushing's statistics, the transfrontal

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Technic having been used in almost all of our pituitary operations, whereas most of Cushing's patients were operated upon transsphenoidally (64.6 per cent of the chromophobe and 90 per cent of the acidophil adenomata).

There were 28 (11.3 per cent) postoperative fatalities after 246 chromophobe adenoma operations, 4 (9.5 per cent) after 52 acidophil, 2 after 3 malignant, and none after the 2 basophil operations. The results improved with time, however, and the series of 30 acidophil adenomata operated upon in the last 10 years had the remarkably low mortality rate of 3.3 per cent. All patients who remained in the hospital and died there from any cause are included in these figures. The postoperative mortality rates of Cushing's 338 cases were 4.9 per cent for the chromophobe and 8.6 per cent for the acidophil, without any essential difference between the transsphenoidal and the transfrontal operations. Grant's series (143 pituitary adenomata) showed a mortality rate of 11.3 per cent for the transsphenoidal and 9.5 per cent for the transfrontal route. It is obvious that there are fewer postoperative deaths in cases of small intrasellar growths and that the mortality rate is much higher when there is extrasellar extension. Jefferson's reports 2 per cent mortality in the first and 33 per cent in the second group. In our series there were 14 fatalities (35 per cent) after operations for chromophobe adenomata with extension (40 cases), and 14 deaths (6.4 per cent) after operations for tumors without extension.

The causes of deaths are listed in Table 1.

Most fatalities are due to the incomplete removal of large adenomata invading the hypothalamus and the 3rd ventricle. The extirpation, however, of such tumors is hardly possible. Hyperthermia without any other symptom followed by death has been observed in 3 cases. Hyperthermia is a well known factor in pituitary operation statistics and is supposed to be the sign of a hypothalamic crisis, although its origin is not clear.

### EXTRASELLAR EXTENSIONS

It is known that a certain number of pituitary adenomata tend to extend into the intracranial chamber. According to the estimation of Henderson...