METASTATIC TUMORS OF THE BRAIN FROM A
NEUROSURGICAL POINT OF VIEW

A FOLLOW-UP STUDY OF 158 CASES

TORE PATRICK STÖRTEBECKER, M.D.

Neurosurgical Clinic, Serafimerlasarettet,* Stockholm, Sweden

(Received for publication July 6, 1953)

The purpose of the present paper is to evaluate the neurosurgical treatment of metastatic tumors of the brain, illustrated by earlier reports from the literature and the material collected from the Neurosurgical Clinic of Serafimerlasarettet.

Frequency of Metastatic Tumors of the Brain. According to Bailey,2 "statistics indicate that metastases to the brain from malignant tumors will be found in about 0.5 per cent of necropsies. The percentage of primary neoplasms of the brain is perhaps 1 per cent of all necropsies. This would indicate that of all intracranial neoplasms, both primary and secondary, metastases constitute perhaps 33 per cent. In neurosurgical statistics the percentage of metastatic tumors is only about 4 per cent since usually only those are sent to the surgeon in which the primary source has not been discovered.” His impression, however, was that both figures are incorrect.

The frequency of metastasis to the brain, estimated from large general autopsy material, is found to be high, ranging from 13.5 to 37 per cent of the total number of intracranial tumors.5,16,20,28 On the other hand, in neurosurgical material the same frequency is low, ranging from 3.5 to 7 per cent.5,7,9

Cushing7 stated, with regard to metastatic intracranial tumors: "Their relative scarcity in the series of brain tumours as a whole, viz., 4.2 per cent, by no means represents their true clinical incidence, for we refrain when possible from accepting patients with obvious intracranial metastases since so little can be done for them by surgical procedures.”

The neurosurgical treatment of intracranial metastatic tumors is considered by most authors to be a thankless task.2,8,14 Grant14 expressed the opinion that "surgery, whether radical or palliative, is of no ultimate benefit to these patients insofar as prolongation of life is concerned.”

A more positive neurosurgical approach has been advocated by Oldberg25 who wrote: "It may be possible to extirpate the metastasis, with great relief to the patient and with prolongation of his life expectancy.” This seems to be the fact at least concerning metastatic hypernephroma and I29 have reported 1 case in which the patient is still alive 17 years after the intracranial operation.

* Director: Professor Herbert Olivecrona.
METASTATIC TUMORS OF THE BRAIN

"Whether or not to operate when the tumor is known to be of metastatic origin is frequently difficult to decide," to quote Dandy. In the following I shall try to elucidate whether attempts to carry out radical neurosurgical treatment are justified in patients suffering from metastatic tumors of the brain.

MATERIAL

During the 30-year period from 1922 to 1951 a total of 4444 patients with verified brain tumors were admitted to the Neurosurgical Clinic of Serafimerlasarettet. There were 156 cases (3.5 per cent) of metastatic intracranial tumors. A few recent cases from 1952 have been included, thus making the total of 158 cases reported here.

AGE AND SEX INCIDENCE

There is a slight preponderance of males in the youngest group below 20 years and in the ages from 50 to 60. As a whole the sex incidence is about the same in each group.

The youngest patient was a boy of 17 years with a metastasis to the brain from a seminoma. The oldest was a man aged 70 with a cerebellar metastasis from a hypernephroma. In 70 per cent of the cases (114 patients) the age was between 40 and 60 years, the common cancer age.

SITE OF PRIMARY GROWTH

The pathological type of the metastasis and its primary source are important factors in neurosurgery. The primary sites, listed in order of frequency of appearance, are given in Table 1.

Hypernephroma metastases were the most common (20 per cent). Metastases from bronchial carcinoma occurred in 16 per cent and mammary carcinoma in only 7 per cent. These figures, however, are too low, as in about one third (51) of the total number of cases it was impossible to trace the primary growth because most of these patients died at home without autopsy.

According to earlier reports, bronchial carcinoma is the most frequent intracranial metastatic type encountered. The following figures have been given: 22 per cent (Elvidge11), 25 per cent (Gutting16), 29 per cent (Hannemann17), 30 per cent (Christensen5), 35 per cent (Meagher and Eisenhardt24), and 38 per cent (Brunner4).

Mammary carcinoma also dominates as a source of intracranial metastatic tumors, according to Christensen, Elvidge11 (16 per cent), Hannemann17 (17 per cent), Brunner4, Meagher and Eisenhardt24 (25 per cent), and Gutting16 (26 per cent).

Hypernephroma as the primary growth is considered rarer; the frequency reported by Elvidge11 was 3.3 per cent; Hannemann17 found 4 per cent, Cushing7 5.5 per cent, Christensen, Grant14, Gutting16 about 8 per cent, and Davis9 10 per cent. The corresponding figure in my material is much higher,