METASTATIC HYPERNEPHROMA OF THE BRAIN
FROM A NEUROSURGICAL POINT OF VIEW
A REPORT OF 19 CASES

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In neurosurgery the question arises from time to time as to the advisability of operating upon a patient with cerebral metastasis. To take an example: a patient with a history of having been operated upon for hypernephroma shows clinical manifestations of brain tumor. The tumor being in all probability a metastasis, the efficacy of surgical intervention is questioned.

In the present report some aspects of this theme, illustrated by earlier reports from the literature and the material collected from the Neurosurgical Clinic of Serafimerlasarettet, will be given.

Frequency of Brain Metastasis. The problems of metastatic lesions in the brain have been referred to by many authors. Opinions regarding the frequency of brain metastasis differ widely. Statistical analyses of large general autopsy materials have been published (Krasting,16 Rau,19 Rudershausen,20 Gutting14). The relation of brain metastasis to the total number of intracranial tumors was estimated by Rudershausen20 to be 18 per cent and by Gutting14 to be 25 per cent. In a total of 28,831 autopsies Gutting found 243 primary brain tumors and 85 brain metastases.

On the other hand, in a neurosurgical material the frequency of brain metastasis is low, approximately 5 per cent, ranging from 3.4 in some series to 7 per cent in others (Cushing,6 Christensen,4 Davis8 and others).

Cushing6 stated, with regard to metastatic intracranial tumors, that “their relative scarcity in the series of brain tumors 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 metastasis since so little can be done for them by surgical procedures.”

Metastatic brain tumors have been discussed from a neurosurgical point of view by Grant,13 Meagher and Eisenhardt,17 Cushing,6 Bailey,2 Christensen,4 Dandy,7 Davis,8 Elvidge,19 Oldberg,18 and others.

Grant13 inter alia, expresses the general opinion as regards the hopelessness of surgical treatment in these cases in his statement: “Surgery, whether radical or palliative, is of no ultimate benefit to these patients insofar as prolongation of life is concerned. But surgical intervention for the relief of intracranial pressure is frequently indicated and may go far toward relieving suffering in the last few months of life.”

* Director: Professor Herbert Olivecrona.
This pessimistic attitude is also presented in recent monographs on intracranial tumors (Dandy,\textsuperscript{7} Bailey\textsuperscript{2}).

**Frequency of Metastatic Hypernephroma of Brain.** A review of the literature on the occurrence of metastatic hypernephroma of the brain shows that mostly isolated cases have been reported (Gerwer,\textsuperscript{12} Chukry,\textsuperscript{5} Foerster,\textsuperscript{11} Elmer,\textsuperscript{9} Valdes\textsuperscript{21}).

Augstein\textsuperscript{1} collected from the works of 30 different authors a total of 9 cases of cerebral metastasis from 141 cases of verified hypernephroma. Even Cushing\textsuperscript{6} in his material of 2000 cases of intracranial tumors had only 85 metastatic brain lesions: 56 carcinomas, 20 sarcomas, and 5 hypernephromas. Christensen,\textsuperscript{4} in a series of 2023 operations for intracranial tumors, found metastasis in 82 cases (3.9 per cent), of which 6 were metastatic hypernephromas. Davis\textsuperscript{9} reported a total of 805 intracranial tumors of which 57 (7 per cent) were metastatic and among them were 6 hypernephromas. Elvidge and Baldwin\textsuperscript{10} found 3 cases of metastatic hypernephromas in 88 cases of metastatic involvement of the central nervous system. Gutting,\textsuperscript{14} in his large autopsy material, had 85 cases of brain metastases, of which 8 were hypernephromas.

Thus the frequency of metastatic hypernephroma in a material of intracranial metastatic lesions appears to range from 3 to 10 per cent; the latter figure is probably the more reliable.

**Frequency of Metastasis from Primary Hypernephroma to Intracranial Cavity.** Exact figures are difficult to obtain. Gutting\textsuperscript{14} reports 77 cases of hypernephroma, of which 8 (10 per cent) metastasized to the brain. Brunner\textsuperscript{3} found metastasis to the brain to be as frequent as 16 per cent. Hannemann’s\textsuperscript{15} figure was somewhat lower.

**Survival Period in Cases of Metastatic Hypernephroma of Brain.** Information concerning the survival period is sparse. Reference to this will be made later but, as already mentioned, the general view appears to be pessimistic. The survival period after clinical manifestations of brain tumor was considered to be on an average only a few months, with a maximum of 6 months, regardless of surgical intervention (Grant,\textsuperscript{13} Meagher and Eisenhardt,\textsuperscript{17} Davis,\textsuperscript{8} Elvidge and Baldwin\textsuperscript{10}).

A more positive neurosurgical treatment, however, with removal of the metastatic lesions, has been advocated; Oldberg\textsuperscript{18} points out that “there are naturally certain criteria which are not to be disregarded in deciding an active surgical course. The most important of these is the question of multiplicity of metastases.” He reports cases of metastatic carcinoma of the brain in which the survival period following intracranial operation is longer than in previously reported cases; 2 years in 1 case after extirpation of a parieto-occipital tumor arising from carcinoma of the breast; in another, alleviation of symptoms for almost 3 years after extirpation of a tumor from a carcinoma of the lung.

Concerning the hypernephromas Cushing\textsuperscript{6} had the impression that metastases of this nature are more favourable than those from a primary sarcoma
or carcinoma. He points out that ordinarily metastases to the brain are multiple; but adds: "Nevertheless one may occasionally encounter what appear to be solitary tumours sometimes of comparatively large size; and the fact that patients . . . have had unexpectedly long postoperative survival periods [6 years in 1 case, 3 and 2 years in 2 other cases] after removal of a metastatic lesion brings a certain gleam of hope to what surgically is an otherwise most gloomy subject."

**MATERIAL**

The present material consists of 19 cases from the Neurosurgical Clinic of Serafinerasaretet. During the 25-year-period from 1922 to 1946, a total of 3256 patients with brain tumor were admitted. There were 112 cases of metastases (3.4 per cent), of which 15 were hypernephromas (about 0.5 per cent of the total tumor material and 13.4 per cent of the metastatic lesions). During the last 4 years 4 additional patients have been operated upon, thus making the total of 19 cases of metastatic hypernephroma of the brain reported here.

Of these 19 patients, 17 were male and 2 were female. Their ages ranged from 36 to 70 years, the average age being 50 years. Ten of the patients were between 50 and 60 years of age; 3 were young, aged only 36 years. Seventeen have died; 2 are still alive. A summary of the 19 cases is given in Table 1.

_How long may a patient live with a metastatic hypernephroma of the brain?_ It will be seen that some patients are living several years after the appearance of clinical manifestations of brain tumor; 1 is still alive more than 14 years later. Among the patients who have died 1 lived for 6½ years, 2 for more than 4 years, 1 for more than 3 years, 2 for more than 2 years and 2 for 1 year after manifestation of cerebral symptoms. The other 10 patients had fairly short periods of life, from 2 to 11 months. The survival periods after onset of intracranial symptoms and after intracranial operation are shown in Table 2.

The following cases exemplify the variation of symptoms and course of hypernephroma metastasis to the brain.

**Case 1.** J.Nr. 152/36. J.A., a 51-year-old farmer, had a right nephrectomy for malignant hypernephroma in 1934. One year later, there developed headache, impaired vision, and slight motor ataxia. In 1936 he was operated on for a tumor in the right cerebellar hemisphere, and a growth the size of a hen's egg was removed (Fig. 1A). This proved to be a metastatic hypernephroma (Fig. 1B). The postoperative course was uneventful, but owing to highly choked discs, about 5D, optic atrophy developed with reduction in vision.

The patient is still living, 14 years after the brain operation, and is in tolerably good health. He has slight ataxia and impaired vision, but is able to do light manual work, read papers and write letters clearly and distinctly.

**Case 2.** J.Nr. 533/44. T.N., a 52-year-old man, had a left nephrectomy for hypernephroma in 1940. In 1944, 4 years later, he showed neurologic symptoms, headache, impaired vision, and a slight right-sided hemiparesis. Enucleation of a
**TABLE 1**

19 cases of metastatic hypernephroma of the brain.

<table>
<thead>
<tr>
<th>Cases</th>
<th>Sex Age</th>
<th>Operations</th>
<th>Metastasis in</th>
<th>Period from Onset of Intracranial Symptoms</th>
<th>Survival Period After Brain Metastasis Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td></td>
<td></td>
<td>Brain</td>
<td>to Brain Metastasis Operation</td>
<td>to Death or to Present Date</td>
</tr>
<tr>
<td>1. J.A. 152/36</td>
<td>M 51</td>
<td>1. Renal dx. 2. Cerebellar</td>
<td>Solitary at op.</td>
<td>Living</td>
<td>8 mos.</td>
</tr>
<tr>
<td>3. K.J. 1411/50</td>
<td>M 43</td>
<td>Frontal lobe dx.</td>
<td>Solitary at op. (No autopsy)</td>
<td>No autopsy</td>
<td>5 yrs.</td>
</tr>
<tr>
<td>5. A.L. 1488/29</td>
<td>M 50</td>
<td>Cerebellar</td>
<td>Solitary at op. (No autopsy)</td>
<td>No autopsy</td>
<td>4 mos.</td>
</tr>
<tr>
<td>7. Z.E. 980/46</td>
<td>M 40</td>
<td>1. Renal dx. 2. Parietal lobe dx.</td>
<td>Solitary at op. (No autopsy)</td>
<td>No autopsy</td>
<td>6 mos.</td>
</tr>
<tr>
<td>8. B.L. 1013/46</td>
<td>M 47</td>
<td>Fossae med. et post. bas. cranii (non-radical)</td>
<td>&quot;Carpet-like&quot; at op. (No autopsy)</td>
<td>No autopsy</td>
<td>1 yr., 4 mos.</td>
</tr>
<tr>
<td>10. J.A. 990/42</td>
<td>M 59</td>
<td>Cerebral hemisph. dx.</td>
<td>Multiple</td>
<td>No autopsy</td>
<td>1½ mos.</td>
</tr>
<tr>
<td>11. A.M. 603/49</td>
<td>M 52</td>
<td>1. Renal dx. 2. Frontal lobe dx.</td>
<td>Solitary at op. (No autopsy)</td>
<td>No autopsy</td>
<td>1 mos.</td>
</tr>
<tr>
<td>12. A.P. 201/50</td>
<td>M 38</td>
<td>Pariet.-occip. region dx.</td>
<td>Solitary at op. (No autopsy)</td>
<td>Multiple</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>14. K.F. 1180/44</td>
<td>M 70</td>
<td>Cerebellar (Autopsy: Renal bilat.)</td>
<td>Solitary</td>
<td>None</td>
<td>6 mos.</td>
</tr>
<tr>
<td>15. E.S. 938/30</td>
<td>M 50</td>
<td>Temporal lobe sin.</td>
<td>Solitary</td>
<td>None</td>
<td>3 mos.</td>
</tr>
<tr>
<td>17. K.R. 219/36</td>
<td>M 57</td>
<td>Cerebellar (Autopsy: Suprarenal sin.)</td>
<td>Solitary</td>
<td>None</td>
<td>9 mos.</td>
</tr>
<tr>
<td>18. K.K. 857/49</td>
<td>M 41</td>
<td>No op. (Autopsy: Region pontis + renal dx.)</td>
<td>Solitary</td>
<td>Multiple pulmonary</td>
<td>2 mos.</td>
</tr>
<tr>
<td>19. J.S. 491/37</td>
<td>M 36</td>
<td>No op. (Autopsy: Multiple cerebral + suprarenal sin.)</td>
<td>Multiple</td>
<td>Multiple</td>
<td>2 mos.</td>
</tr>
</tbody>
</table>

1½ mos—5 yrs. 2 mos.—14 yrs., 8 mos. 1 d.—14 yrs.
METASTATIC HYPERNEPHROMA OF THE BRAIN

TABLE 2
Survival periods

<table>
<thead>
<tr>
<th>Years</th>
<th>After Onset of Intracranial Symptoms (Cases)</th>
<th>After Brain Metastasis Operation (Cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1/2</td>
<td>5</td>
<td>8 (+2 not operated)</td>
</tr>
<tr>
<td>1/2-1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>1-2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2-3</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>3-4</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>4-5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5-10</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>10-15</td>
<td>1 (living)</td>
<td>1 (living)</td>
</tr>
</tbody>
</table>

tumor in the left frontal lobe was performed the same year. The tumor, a well-defined greyish-red growth, the size of a hazel nut, proved to be metastatic hypernephroma on microscopic examination (Fig. 2).

The postoperative course was uneventful, but due to choked discs of 6 D., a permanent amaurosis developed. In 1947, 3 years later, the patient was still blind, but otherwise in good health. In 1949, at the age of 58, he died of pneumonia. Autopsy was not performed as he died at home.

Comment. The remarkable fact in Case 2 is the interval of 4 years between nephrectomy and appearance of neurological manifestations. The survival period was 4 1/2 years from the brain operation, and 9 years from the nephrectomy for hypernephroma.

Case 3. J.Nr. 1241/30. K.J., a 43-year-old farmer, had had epileptic fits of left-
sided Jacksonian type for 5 years before admission. During the last year he suffered headache, reduced vision with rapid progress to amaurosis, and left-sided hemiparesis. Ventriculography revealed a big right-sided frontal tumor, which at operation was found to be cystic and of grey-red colour. Pathological diagnosis: Hypernephroma. It was unfortunately not radically removed because of its malignant appearance.

The patient was psychically unaltered and survived for 1½ years after operation. As he died at home, an autopsy was not performed.

A rare operative finding of a metastatic hypernephroma in a meningioma is illustrated in Case 6.

Case 6. J.Nr. 2524/33. M.T., a 45-year-old woman, had been operated upon 3 years previously for a hypernephroma of the left kidney. Two months before admission she was taken ill with left-sided Jacksonian fits beginning in the face, disturbance of speech, and attacks of paresthesias and diminished sensitivity in the left arm. On examination, bilateral choked discs and a slight left-sided facial palsy were found. Roentgenogram of the skull disclosed increased vascularity on the right side above the pterion; the right middle meningeal artery was considerably wider than the left. Ventriculography showed a tumor in the right Sylvian fissure. The operation revealed a tumor half the size of an orange, very vascular and adherent to the dura. Macroscopically it was like a meningioma (Fig. 3). On microscopic examination it was found to be metastatic hypernephroma in a typical meningioma (Fig. 4).

The immediate postoperative course was uneventful, but 10 months later the patient died, probably from pulmonary metastases (which had been observed in the roentgenogram 10 months previously).

Case 17. J.Nr. 519/36. K.R., a 57-year-old merchant, had had balance disturbance and psychic deterioration for about 9 months. On examination, findings were
Fig. 4. Case 6. Photomicrographs of tumor in Fig. 3. (A) Ladewig stain, ×45. (B) Hematoxylin-eosin stain, ×200. In upper left-hand corner, a typical meningioma with characteristic whorl formation. In lower right-hand corner, the metastatic hypernephroma with clear cells.

bilateral dysmetria and rigidity in the lower extremities and increased intracranial pressure with choked discs. Ventriculography showed a right-sided cerebellar tumor. The patient became unconscious immediately before the operation, which in

Fig. 5. Case 17. A single cerebellar metastatic lesion from a hypernephroma of the suprarenal gland without any body metastases.

itself was performed without difficulty. An isolated tumor, the size of a walnut, was easily extirpated, but the patient died the following day. Autopsy showed a tumor of the left suprarenal gland without any metastases elsewhere in the body.
Comment. In the brain of Case 17, there was only this single cerebellar metastasis (Fig. 5) and thus the case represents a good one from a neurosurgical point of view, even if it had a fatal outcome.

An example of general body and multiple brain metastases is shown in Case 19.

Case 19. J.Nr. 491/37. J.A.S., a 36-year-old labourer, had a history of left-sided hemiparesis and slow cerebration for 2 months. Autopsy revealed hypernephroma of the left suprarenal gland with general metastases to the liver and both lungs, and multiple metastases to the brain. Fig. 6 shows a section of one metastatic tumor the size of a goose’s egg and two somewhat smaller.

![Image of brain section](image)


DISCUSSION

To evaluate neurosurgical treatment for brain metastases, the pathological nature and clinical features characteristic of these tumors must be investigated together with their operability. The chances of radical operation are measured by the postoperative period of survival.

Pathology of Metastatic Hypernephroma of Brain. It must be remembered that only about 10 per cent of all hypernephromas metastasize to the brain (Gutting14).

The mode of metastasis is generally accepted to be that of the bloodstream. At autopsy tumor masses are often found invading the inferior vena cava and, passing the lungs, by way of the carotid or vertebral arteries, proceeding to the brain. The migrating hypernephroma cells pass through the lungs, and in some cases we found roentgenographic evidence of pulmonary metastases; a fermentative lysis of the metastatic cells probably takes place in the lungs and this phenomenon would explain cerebral metastasis without any pulmonary metastatic lesions.
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Other modes of metastasis might be possible, e.g. via the subarachnoid space in the lower thoracic region and by the spinal fluid to the brain. In Case 8 this might have occurred, because at operation a peculiar type of metastatic lesion was found spread over the bottom of the middle and posterior fossa cranii and involving cranial nerves (cf. "carcinomatous and sarcomatous pachymeningitis").

The rapidity with which metastatic tumors grow is an important factor in determining whether a lesion is benign or malignant. Metastatic hypernephromas appear to grow very slowly. Christensen\(^1\) pointed out that in some cases of malignant tumor, such as hypernephroma and melanoma, intracranial metastases may occur as late as 4 years or more after removal of the primary tumor. In Case 2 in this series an interval of 4 years elapsed between the nephrectomy and the appearance of neurological symptoms. The metastatic tumor was, in this case, situated in the frontal lobe, which is a comparatively silent zone, and was only the size of a hazel nut. In 4 of the other cases more than 1 year, and even 2 to 3 years elapsed between removal of the primary tumor and the appearance of cerebral symptoms (Table 3).

Clinical Features. The clinical picture of the metastatic lesion is that of a brain tumor and it is not possible to make a diagnosis of metastasis from the case history. Not infrequently Jacksonian fits have been the only symptom for several years (Case 3).

Foerster\(^2\) reported the case of a patient who had had epileptic seizures of focal type for 8 years. At operation a metastatic hypernephroma of the brain, the size of a walnut, was found. The patient recovered and returned to work. He was still alive 1 year after the operation and was free from symptoms.

Bailey\(^3\) pointed out that the symptoms of metastatic cerebral tumor do not differ essentially from those of primary cerebral tumors. But he has noted, as more or less characteristic, the intensity of the headache and mental confusion; there is often tremendous edema of the brain so that the intracranial tension is out of all proportion to the mass of neoplasm present. When signs of general metastasis are found, e.g. to the lungs, no real benefit is derived from operating upon a cerebral metastatic tumor. Bailey advocated that middle-aged or elderly individuals who suddenly develop a psychosis, or focal cerebral symptoms, not obviously luetic or vascular in origin, should have a roentgenogram taken of the lungs.

In Case 6 of my material, a metastatic hypernephroma in a meningioma was extirpated and the patient survived for 10 months, in spite of roentgenographic evidence of pulmonary metastases.

A considerably increased sedimentation rate is sometimes a sign of malignancy, and may be an aid in diagnosis and prognosis. In this material the sedimentation rate ranged from 1 to 88 mm./hour. In 8 cases it was <15 mm./hour. Only 4 patients had greatly increased sedimentation rates, ranging from 40 to 88 mm./hour, and these had multiple metastases in the body. It is difficult to draw any definite conclusions regarding the relationship
of sedimentation rate to the type and extent of metastases. A considerably increased sedimentation rate of 50 mm./hour or more is always suggestive of malignancy, but a low sedimentation rate does not speak against it. For example, 1 of our patients (Case 6) had multiple metastatic hypernephromas in the lungs and a sedimentation rate of only 4 mm./hour.

Survival Period (Table 2). If the length of life is to be considered in relation to the pathological findings, certain factors must be taken into account: (1) Primary tumor, and metastases in the body; (2) Brain metastasis and its pathogenicity: the type of tumor, solitary or multiple, its location in the brain, and rapidity of growth. The neurological symptoms and operability of the tumor depend on these factors.

(1) Primary Tumor. If the patient is to have a good chance of survival for a fairly long time, there must be no metastases in the body. In 7 of our cases the primary tumor was diagnosed, and nephrectomy performed; in 5 cases there was an interval of more than 1 year before neurological symptoms developed (Table 3).

### Table 3

<table>
<thead>
<tr>
<th>Cases</th>
<th>Period from Nephrectomy</th>
<th>Period from Onset of Intracranial Symptoms</th>
<th>Survival Period After Brain Metastasis Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Sex</td>
<td>Age (Years)</td>
<td>to Onset of Intracranial Symptoms</td>
</tr>
<tr>
<td>1.</td>
<td>M</td>
<td>51</td>
<td>1 yr.</td>
</tr>
<tr>
<td>2.</td>
<td>M</td>
<td>59</td>
<td>4 yrs.</td>
</tr>
<tr>
<td>4.</td>
<td>F</td>
<td>58</td>
<td>5 yrs.</td>
</tr>
<tr>
<td>6.</td>
<td>F</td>
<td>45</td>
<td>5 yrs.</td>
</tr>
<tr>
<td>7.</td>
<td>M</td>
<td>65</td>
<td>1 yr.</td>
</tr>
<tr>
<td>9.</td>
<td>M</td>
<td>55</td>
<td>2 mos.</td>
</tr>
<tr>
<td>11.</td>
<td>M</td>
<td>35</td>
<td>4 mos.</td>
</tr>
</tbody>
</table>

If it can be presumed that a primary tumor has been removed, the indications for neurosurgical intervention are stronger than if the primary tumor is unknown.

A case reported by Christensen et al. supports this view. A man who 9 years earlier had had a nephrectomy performed for hypernephroma was operated upon for an intracranial tumor. Histological examination of the removed tumor revealed a typical picture of hypernephroma. Three years after the brain operation the patient was alive, free from symptoms, and back at full work.

Cushing mentioned a very interesting case in which “an easily enucleable 51-gram tumour was successfully removed from the left supramarginal gyrus of a [patient] who had previously shown a global aphasia. A complete recovery followed. . . The tumour was diagnosed as a hypernephroma. . . Owing to a recurrence of symptoms seven months later a second operation was performed, . . . when a precisely similar 42-gram tumour was removed from
the same situation as before . . . with complete recovery . . . . He remained symptom-free and led a normal active life for five years.” A pulmonary lesion and apparent metastases to the bones were then disclosed and the patient died in another hospital without a postmortem examination.

(2) Brain Metastasis. If this is solitary, its removal is possible. Technically, the metastatic hypernephromas in this material have been easily enucleated. The brain operation itself, therefore, is comparatively easy, if the tumor is satisfactorily located. With modern methods of diagnosis, ventriculography combined with angiography, we are technically in a better position now than we were before.

Operative Mortality (Table 1). Of the 19 patients reported, 17 have been operated upon, with 5 fatalities within 20 days of the operation, making a 30 per cent operative mortality. The 2 patients not operated upon were in too poor a condition for surgical intervention, and also had multiple body metastases.

Single or Multiple Brain Metastases. In most of the patients operated upon well defined, easily extirpative tumors were found at the operation. There is certainly in these patients a possibility of metastases to other parts of the brain. At the operation, however, one had, from a clinical point of view, fairly localized neurological findings to deal with, a fact that might contradict multiplicity.

In the brain material examined post mortem, consisting of 8 cases, a solitary tumor was found in 5 cases, and in 1 case, two tumors lying close together (Fig. 7).

In 1 case there were clearly multiple brain metastases with diffuse location; there was one very large tumor which seemed to be older, and there were several smaller ones (Fig. 6).

Thus the brain metastases found at operation seemed in 15 cases to be of a solitary type. Of the 8 cases examined post mortem, the brain in 5 cases showed only a single metastasis.

Postoperative Survival Period. Finally, a few words may be said concerning the general health and working capacity of the patients after operation.

Fig. 7. Case 15. Section of brain showing two cerebral metastatic tumors, one larger and one smaller. The patient was a 50-year-old mason with symptoms of right-sided hemiparesis and aphasia of sensory type. Operation disclosed a deeply situated tumor in the left temporal lobe. Death occurred 5 days after operation.
Often patients obtain relief of the very troublesome headache. In some patients there is a surprising improvement in general health, and in a few instances the patient returns to an active life.

Unfortunately there is often a diminution of vision because of highly choked discs; in some cases there is even total amaurosis postoperatively. One patient (Case 2) had a postoperative survival period of 4½ years and was quite well otherwise. Thus an early diagnosis and suitable treatment are important in order to escape the very serious consequences of edema of the brain usually caused by the metastasis.

Both the previously reported cases and some of my own cases in which there has been a long survival period (my Case 1, still alive, 14 years after removal of a metastatic hypernephroma of the brain) speak in favour of more active neurosurgical treatment for brain metastases.

**SUMMARY**

1. A neurosurgical material of 19 cases of metastatic hypernephroma of the brain is presented.
2. The frequency of hypernephroma among the metastatic brain tumors is about 13 per cent.
3. Metastasis to the brain appears, in most cases, to be solitary. A rare case of a metastatic hypernephroma in a meningioma is also reported (Case 6).
4. Patients can live for several years after extirpation of metastatic hypernephroma of the brain; in 1 case the patient is still alive 14 years after the brain operation (Case 1).
5. The prognosis appears to be most favorable in those cases in which the primary tumor in the body has been diagnosed earlier and removed, e.g. by nephrectomy, before symptoms manifesting cerebral metastasis appear.

Therefore, attempts to carry out radical neurosurgical treatment appear to be justified in patients suffering from metastatic hypernephroma of the brain.

**REFERENCES**

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