

## Case Report

# Metastasis of Carcinoma of Prostate to Meningioma

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**Summary.** A carcinoma of the prostate in a 75-year-old patient metastasized to a clinically unknown meningioma. The metastatic deposit produced a sudden enlargement of the meningioma leading to pressure on the brain-stem and consequently causing a rapid fatal course of the disease.

## Introduction

Metastasis of one primary tumour to another independent primary tumour is very unusual, considering the frequency of neoplastic diseases and the not uncommon occurrence of multiple primary tumours especially in advanced age (Watson, 1953; Suen *et al.*, 1974).

The present report describes the case of a 75-year-old man with a carcinoma of the prostate metastatic to a clinically unknown meningioma, and causing by this event a dramatic development of the course of the disease.

## Case Report

A 73-year-old male, previously in good health, was first admitted in May 1972 to the Department of Surgery, Städtisches Krankenhaus Lübeck, because of intermittent attacks of dorsal pain varying in intensity and a weight loss of about ten kilograms during the last months.

Physical examination as well as laboratory data and radiographs of the vertebral column led to the diagnosis of a metastasizing carcinoma of the prostate. A biopsy of the prostate confirmed the clinical diagnosis. Therefore the patient was treated with stilboestrol-diphosphate. He remained quite well for several months but was readmitted in May 1973 following another episode of increasing dorsal pain which was treated symptomatically. Prior to his last admission in December 1973 the patient, now aged 75 years, was reported to have been unstable on his feet causing tumbling at several occasions. His body was found to be covered by multiple haematomas. He died ten hours after admission.

The *necropsy* (S 369/73) confirmed the diagnosis of metastatic carcinoma of the prostate. Metastases were found in the para-aortic lymph nodes and in extended parts of the vertebral column. The liver also contained numerous pea-sized metastatic nodules. A firm, gray, nodular intracranial tumour measuring approximately  $4 \times 2.5$  cm appeared at the left cerebellopontile angle extending partially under the dura. The brain-stem was displaced to the right of its normal position and compressed by the tumour mass (Fig. 1). An edema of the brain was present. No intracerebral metastases.

*Microscopically*, the prostate is infiltrated by solid cords of rather uniform carcinoma cells with a tendency to invade the perineural lymphatic spaces (Fig. 2). In some regions nests of well-differentiated squamous metaplasias are present (hormone treatment). In all

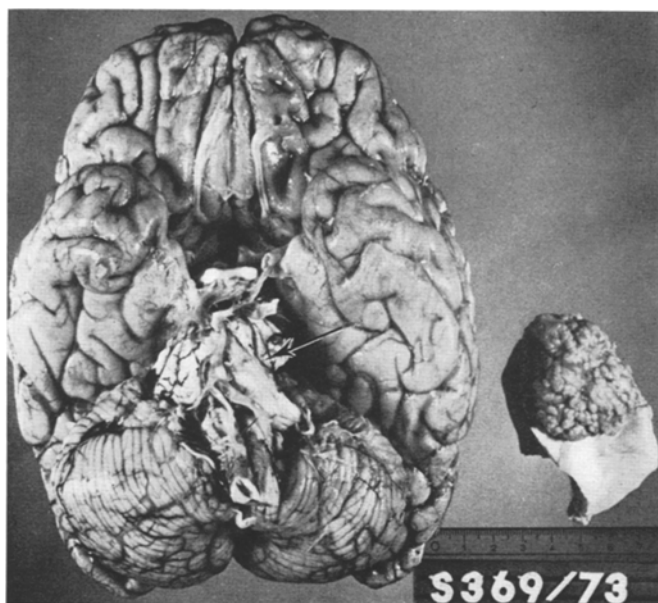


Fig. 1. Base of brain, showing displacement of the brain-stem to the right and compression (arrow) caused by the meningioma (right)

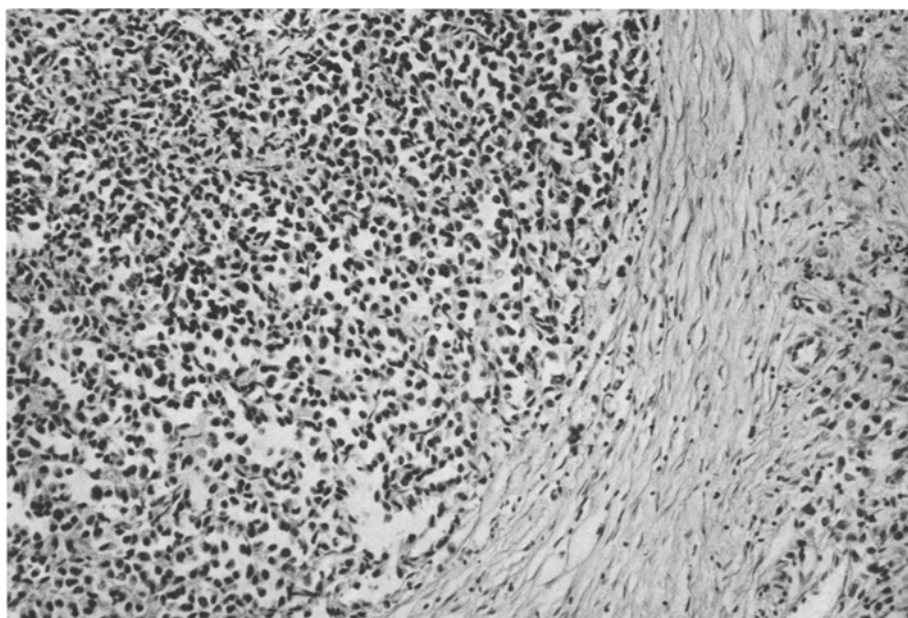


Fig. 2. Primary carcinoma of the prostate. H.E.  $\times 100$

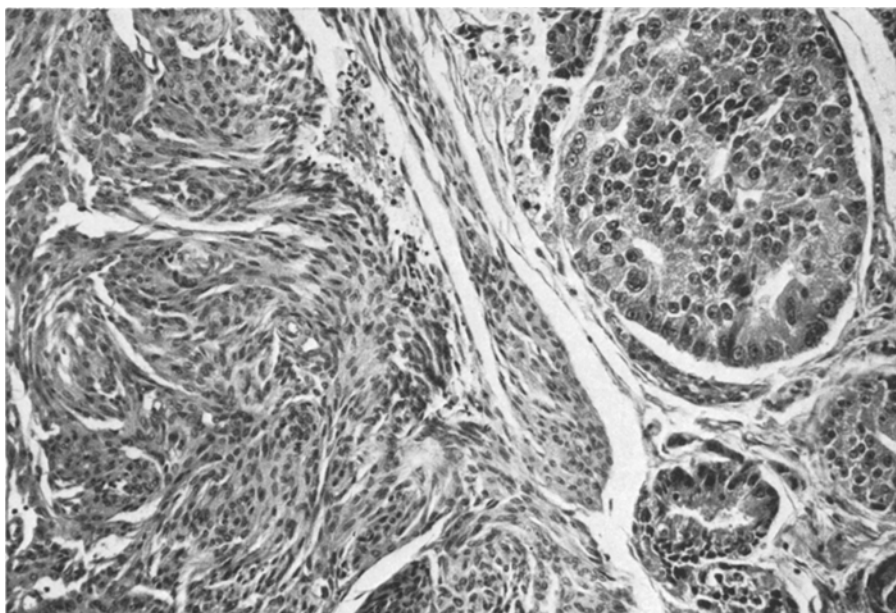


Fig. 3. Typical meningioma invaded by metastatic carcinoma of prostate (right). H.E.  $\times 120$

metastatic deposits the carcinoma tends to form a more glandular pattern. On the other hand, the brain tumour has the typical structure of an endotheliomatous meningioma made up of cells partly forming whorls, partly arranged in streams. Scattered psammoma bodies are present. Mitotic figures are not observed. In the centre of this tumour, however, the presence of carcinomatous cords and nests is observed closely resembling the histological pattern of the extracranial metastases of the carcinoma of the prostate (Fig. 3). At the edge of the metastatic carcinoma necrotic areas are seen.

### Discussion

In the literature only 16 reports of extracranial tumours metastatic to a meningioma were found:

In five of these cases (Fried, 1930; Bernstein, 1933; Lapresle *et al.*, 1952; Osterberg, 1957; Zoos, 1970) like in the present one, the meningioma was clinically unknown and represented an incidental finding at necropsy. Zülch (1956) mentions one observation and Rubinstein (1972) refers to three more cases of metastasis to a meningioma, but both authors do not provide further details.

The remaining seven cases reported in the literature (Störtebecker, 1951; Osterberg, 1957; Peison and Feigin, 1961; Best, 1963; Wilson *et al.*, 1967; Anlyan *et al.*, 1970; Wolintz and Mastri, 1970) presented clinical symptoms of a space-occupying intracranial lesion. Among these, Störtebecker's case of a hypernephroma metastatic to a meningioma is mentioned again in a brief notice by Henschen (1955). The suprasellar location of a meningioma in one of these pa-

tients (Peison and Feigin, 1961) led to the clinical diagnosis of a pituitary adenoma, but a surgical operation and biopsy were refused.

Primary carcinomas of the lung (Fried, 1930; Osterberg, 1957; Best, 1963; Wilson *et al.*, 1967; Wolintz and Mastri, 1970; Zoos, 1970), breast (Bernstein, 1933; Lapresle *et al.*, 1952; Anlyan *et al.*, 1970) and kidney (Störtebecker, 1951; Zülch, 1956) account for eleven of thirteen cases with metastatic deposits in meningiomas. These extracranial neoplasms commonly show widespread dissemination throughout the body.

In one further case the metastasizing tumour probably originated in the gall bladder (Peison and Feigin, 1961). In the first case reported by Osterberg (1957) the presence of a metastatic deposit in a meningioma is questionable. Neither surgically nor by necropsy a primary extracranial tumour was confirmed. Since clear cells may be found in the angioblastic variety of meningiomas, they may have been misinterpreted as a metastasis of a renal carcinoma. A metastatic carcinoma of the prostate in a meningioma like in the patient reported here has not yet been observed, although this neoplasm belongs to the most frequent cancers in advanced age (Harbitz and Haugen, 1972; Suen *et al.*, 1974). This has at least to be seen on the background that the simultaneous occurrence of a malignant extracranial tumour and a meningioma is not uncommon (Henschen, 1955).

As meningiomas usually grow slowly over the course of years there is little doubt that in the present case the metastasis was responsible for the sudden enlargement of this tumour. The more rapid relative growth of the metastatic focus thus produced acute onset of neurological symptoms. They were caused by the fatal location of the meningioma in the cerebellopontile angle which led to a pressure on the brain-stem and a rapid death.

The nutritive and metabolic requirements of a rapidly growing malignant tumour are great as can be seen by the frequent occurrence of necrotic areas in these neoplasms. The rarity of a metastasis of cancer to cancer (Rabson *et al.*, 1954; Berg, 1955; Gore and Barr, 1958; Anlyan *et al.*, 1970) therefore seems to justify the assumption that a primary carcinoma provides an unfavourable environment for the metastatic implantation and development of another malignant tumour. Benign, slowly growing tumours like meningiomas possibly offer a better soil for the implantation and growth of a metastatic tumour. The relatively more common, though rare occurrence of metastatic deposits in benign tumours supports this assumption (Gore and Barr, 1958; Anlyan *et al.*, 1970).

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