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CASE REPORTS

Brain metastases from prostate adenocarcinoma

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Abstract Brain metastases of prostate adenocarcinoma are rare. We report a case of brain metastases from prostate adenocarcinoma 15 months after the diagnosis of the primary tumour. The patient had headache and one solitary metastasis upon magnetic resonance imaging (MRI). The biopsy performed showed metastatic prostate adenocarcinoma. He was treated with surgery and cranial irradiation.

Keywords Brain metastases · Prostate · Adenocarcinoma.

Introduction

Brain metastases of prostate adenocarcinoma are rare and appear many years after initial diagnosis. Fewer cases have been reported in the literature. We report a case of a temporal metastasis of prostate adenocarcinoma.

Case

A 55-year-old male consulted for intense and incapacitating pain in lower back. He was known to suffer from ischaemic cardiomyopathy. He was also smoker. A radiograph demonstrated metastases in several lumbar vertebrae. So, magnetic resonance imaging (MRI) was performed, showing metastatic spinal bone disease. Alkaline phosphatase was 210 mg/dl and PSA level was 200 ng/dl (normal <4 ng/dl).

The patient started treatment with a non-steroidal anti-inflammatory and was referred to the urologic department. Rectal examination revealed a diffuse, enlarged and firm prostate without palpable nodules. Rectal endosonography showed a heterogeneous prostate and the biopsy showed an adenocarcinoma, Gleason 3+4 with perineural involvement. Tc^{99} bone scan found sclerotic bone metastases (Fig. 1). We started treatment with combined androgen blockade (CAB) with bicalutamide, gosereline every 3 months and zoledronic acid. Eight months later, the patient developed weakness in his legs without sphincter incontinence. A new MRI showed spinal cord compression and palliative radiotherapy (3000 cGy; 10 fractions of 300 cGy) was delivered with clinical improvement.

PSA levels increased two months later (300 ng/dl), and we stopped the CAB and started docetaxel, (75 mg/m^2) and zoledronic acid, both every 3 weeks. After 8 cycles of docetaxel his PSA level decreased (30 ng/dl). During those months the patient complained of bone pain in back, arms and hip, and he was treated with palliative radiotherapy and after the chemotherapy with Sr^{83}.

Fifteen months after his diagnosis, the patient suffered an intense headache. The MRI showed a large mass in his left temporal lobe (which was enhanced with intravenous contrast) that compressed the mid-line of the brain (Fig. 2).

Phenytoin and intravenous dexamethasone were started and a craniotomy with excision of his left temporal lobe was performed, followed by palliative cranial radiotherapy.

Histological examination of the lesion demonstrated a metastatic adenocarcinoma, positive for PSA, CK7 and CK20 in the immunohistochemical staining.

The patient was free of pain and without symptoms for 2 months, but he had lymph node progression and died 6 months later.

Discussion

Brain metastases of prostate cancer are a rare event (0.2–2%). In a retrospective analysis of 16,280 patients with prostate cancer, performed by Tremont-Lukats, 103 symptomatic pre-mortem brain metastases were diagnosed by imaging: 78 supratentorial, 22 infratentorial and 3 in both locations [1].

McCutcheon et al., in a series of 7994 patients with prostate cancer, found parenchymatous brain metastasis in

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Fig. 1 Bone metastases in Bone scan

Fig. 2 Brain metastases in CT scan

38 patients, with a mean survival of 4 months without treatment and 6 months with cranial radiotherapy [2]. Solitary brain metastases were showed in 32 of these patients.

Adenocarcinoma was the most frequent histology found, but other histologic types like small cell carcinoma, cribiform or transitional cell carcinomas were also found. Brain metastases in these unusual histologies are more frequent than in adenocarcinomas [2–4]

Prostate cancer can spread to the brain by blood vessels or through a previous metastasis in bone or dura mater [5].

Headache and cognitive changes are the most frequent symptoms, due to increasing intracranial pressure. Ataxia and tremor only appear when the cerebellum and cerebral trunk are involved [1]. Mean survival is 1–3 months in untreated patients and 3.5–6 months in those treated with radiotherapy, and it reaches 9 months if radiosurgery is performed.

Patients undergoing surgery (with or without radiotherapy) have a mean survival longer than patients who only receive cranial radiotherapy (13.6 months vs. 6 months, respectively) [2].

Recently published literature suggests that surgery is better for patients with solitary and accessible brain metastasis, and even with multiple brain metastases if they have a good performance status (PS) [1].

There are no conclusive data about hormonal response in brain metastases from prostate cancer. Theoretically, androgen deprivation on responder tumours can be effective to control brain metastases [6].

In our opinion, the management of brain metastases of prostate cancer should be: (1) surgery in patients with a solitary and accessible metastasis and a good PS; (2) radiosurgery in patients with 1–3 brain metastases, metastasis not accessible for surgery and also good PS; and (3) whole cranial irradiation if there are more than 3 not accessible to metastasectomy.

Conflict of interest The authors declare no conflict of interest.

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