

## . 个案报道 .

## 前列腺癌脑膜转移 2 例

贾文学 王 吉 朱岳峰 刘彦廷 艾文兵 田春雷

**【摘要】** 前列腺癌是全球第二常见的男性恶性肿瘤。近年来,随着我国人口老龄化的加剧,前列腺癌的发病率越来越高。前列腺癌较易发生远处转移,其中骨转移最为常见,脑转移十分罕见。前列腺癌脑转移多发生在疾病晚期,由于缺乏早期筛查手段,且临床治疗方法有限,预后较差。本文报道 2 例前列腺癌脑膜转移,其中 1 例 64 岁,采用手术全切除肿瘤联合术后放疗、内分泌治疗,术后 5 个月随访,生活自理;1 例 70 岁,采用手术全切除肿瘤,术后未行辅助放化疗,术后 6 个月随访,生活自理。因此,在临床工作中,老年男性脑膜病变鉴别诊断时,应考虑到前列腺来源的可能。对于前列腺癌脑膜转移,如果病人全身状况良好、颅外疾病控制较好,可采用手术切除肿瘤联合术后放化疗,有助于延长病人的生存期。

**【关键词】** 脑转移瘤;前列腺癌;显微手术;预后

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## Two cases of meningeal metastasis from prostate cancer

JIA Wen-xue<sup>1</sup>, WANG Ji<sup>1</sup>, ZHU Yue-feng<sup>1</sup>, LIU Yan-ting<sup>1</sup>, AI Wen-bing<sup>2</sup>, TIAN Chun-lei. 1. Neurology Institute, Three Gorges University & Department of Neurosurgery, First Clinical College of Three Gorges University (Yichang Central People's Hospital), Yichang 443003; 2. Department of Neurosurgery, Yilin Hospital, Yichang 443003, China

**【Abstract】** Prostate cancer ranks as the second most prevalent malignancy in men globally. The aging population in China has contributed to a notable increase in prostate cancer incidence. Notably, prostate cancer frequently metastasizes distantly, with bone metastasis being predominant and brain metastasis rare. Brain metastases from prostate cancer typically manifest in advanced stages of the disease and are associated with a poor prognosis due to limited early screening modalities and clinical interventions. This paper reports two cases of meningeal metastases originating from prostate cancer. One case involved a 64-year-old patient who underwent surgical resection followed by postoperative radiotherapy and endocrine therapy, achieving independent living at a 5-month follow-up. The other case featured a 70-year-old patient who underwent surgery without adjuvant radiotherapy or chemotherapy, also attaining independent living at a 6-month follow-up. Therefore, when differentiating meningeal space-occupying lesions in elderly men, consideration should be given to the potential of a prostate origin. For patients presenting with meningeal metastases stemming from prostate cancer, if the patient's general condition is good and the extracranial disease is well controlled, surgical resection combined with radiotherapy and chemotherapy can help prolong the patient's survival outcomes.

**【Key words】** Brain metastasis; Prostate cancer; Microsurgery; Prognosis

前列腺癌是全球第二常见的男性恶性肿瘤,2020 年新增病例接近 140 万例,其中约 37.5 万人死亡<sup>[1]</sup>。近年来,随着我国人口老龄化的加剧,我国前列腺癌的发病率越来越高<sup>[2]</sup>。前列腺癌较易发生远处转移,其中骨转移最为常见,脑转移十分罕见<sup>[3]</sup>。然而,前列腺癌脑转移一旦发生,则病情进入难治阶段。本文报道 2 例前列腺癌单发脑转移。

## 1 病例资料

病例 1:男,64 岁,因头痛头晕入院。入院后颅脑 MRI 检查示左侧额颞顶部硬膜下不规则分叶状异常信号,呈匍匐生长,范围较广,大小约 6.8 cm×4.5 cm,增强后强化明显(图

1)。病人无泌尿生殖系症状。肺部 CT 检查示多发胸椎及胸骨骨质破坏。完善术前准备后,行脑膜病损切除术,术中见肿瘤色灰白,质韧,血供一般,不规则分叶状,少量圆形独立病灶(直径 5 mm),边界清楚,与正常脑组织轻度黏连,镜下全切除肿瘤,大小约 7 cm×5 cm×3 cm。术后病理诊断为(脑肿瘤)转移性中至低分化腺癌,结合免疫组化结果,考虑前列腺来源。免疫组化结果:CK7(-),CK20(-),NapsinA(-),TTF-1(-),Ki-67(LI 约 40%),CDX-2(部分+),SATB-2(-),NKX3.1(+),P504s(+),PSA(+),Villin(-)。术后追查:血清前列腺特异性抗原(prostate-specific antigen, PSA)>100 ng/ml;前列腺超声示前列腺增大,内部回声不均匀,未见明显占位。术后 1 个月在肿瘤科行前列腺癌骨转移适形放疗(PTV/30GY/10F)、内分泌治疗(比卡鲁胺及亮丙瑞林),病情好转出院。术后 5 个月随访,病人一般情况可,头痛头晕等改善,无明显功能障碍,可完成一般体力活动;未行影像学复查。

病例 2:男,70 岁,因头痛头晕入院。既往 9 年前行前列腺穿刺活检病理诊断为前列腺癌,后行前列腺局部放疗(DT 54Gy/27F),后一直行内分泌治疗(戈舍瑞林及比卡鲁胺)。

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作者单位:443003 湖北宜昌,三峡大学神经病学研究所/三峡大学第一临床医学院&宜昌市中心人民医院神经外科(贾文学、王吉、朱岳峰、刘彦廷、田春雷);443003 湖北,宜昌市夷陵医院神经外科(艾文兵)

通信作者:田春雷,Email:cltianyc@163.com

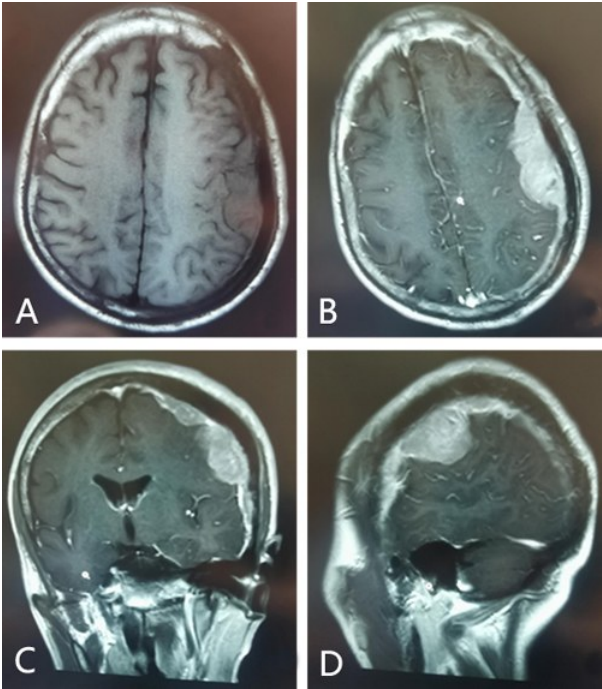


图 1 左侧额颞顶部硬膜前列腺来源的转移性病变术前 MRI 表现  
A. 颅脑 MRI 平扫轴位显示左侧额颞顶部近脑膜下不规则分叶状异常信号，呈匍匐生长，范围较广，大小约 6.8 cm×4.5 cm，伴邻近脑组织水肿；B~D. 颅脑增强 MRI 轴位、冠状位、矢状位，显示左侧额颞顶部病灶不均匀强化，考虑脑膜转移瘤

Figure 1 Preoperative MRI features of a metastatic lesion in the left frontotemporal region arising from the prostate

A: Axial brain MRI shows an irregularly lobulated abnormal signal adjacent to the dura mater in the left frontotemporal region, demonstrating extensive growth measuring approximately 6.8 cm×4.5 cm and accompanied by edema of adjacent brain tissue. B~D: Axial, coronal, and sagittal MR contrast-enhanced images demonstrate heterogeneous enhancement of the lesion in the left frontotemporal region, suggestive of a meningeal metastatic tumor.

2020 年 6 月 24 日行骨肿瘤全身显像 ECT 检查示额骨及左侧髌臼后缘骨代谢活跃。入院后颅脑 MRI 检查示双侧额部近颅骨内板下占位，分叶状，不均匀强化，邻近脑组织水肿(图 2)。血清 PSA>100 ng/ml。盆腔增强 CT 检查示前列腺癌治疗后改变，左侧坐骨、髌骨、股骨颈转移。入院后，行脑膜病损切除术，术中可见瘤色灰白，质韧，血供一般，分叶状，边界清楚，肿瘤侵犯上矢状窦，镜下全切肿瘤连同受累窦壁，大小约 6 cm×4 cm×3 cm。术后病理诊断为转移性前列腺腺泡细胞。免疫组化结果：GFAP(−)，Oligo-2(−)，P504s(+), PSA (局灶+), Ki-67(热点区域约 15%), PCK(+), AR(+), NKX3.1 (+)。术后 6 个月随访，病人一般情况可，头痛头晕等改善，无明显功能障碍，生活能自理；未行影像学复查。

2 讨论

前列腺癌脑转移多发生在疾病晚期，恶性程度高，预后极差<sup>[4]</sup>。前列腺癌中枢神经系统的扩散包括脑实质、硬脑膜和软脑膜转移<sup>[5]</sup>。本文 2 例均为前列腺癌脑膜转移。前列腺

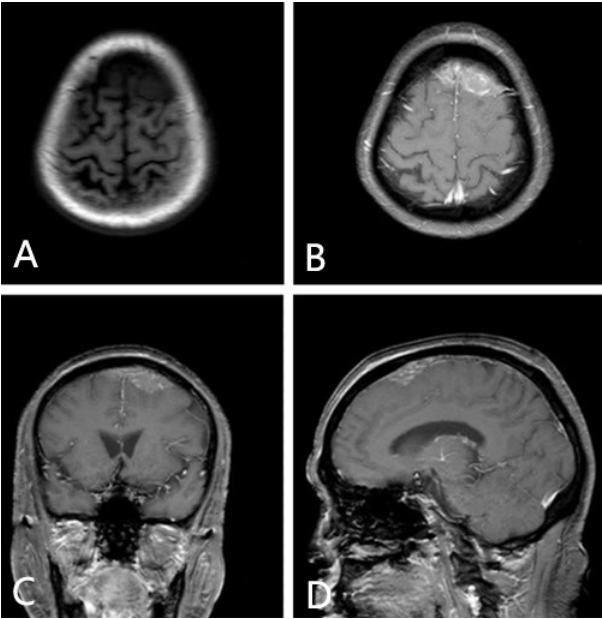


图 2 双侧额部硬膜前列腺来源的转移性病变术前 MRI 表现  
A. 颅脑 MRI 平扫轴位显示左侧额部近颅骨内板下占位伴邻近脑组织水肿；B~D. 颅脑增强 MRI 轴位、冠状位、矢状位，显示双侧额部近颅骨内板下病灶不均匀强化，考虑额部脑膜及邻近颅板转移瘤

Figure 2 Preoperative MRI features of a metastatic lesions in the bilateral frontal meninges arising from the prostate

A: Axial brain MRI demonstrates a left frontal lesion near the inner skull plate with adjacent brain tissue edema. B~D: Axial, coronal, and sagittal brain MR contrast-enhanced images reveal heterogeneous enhancement of bilateral frontal lesions near the inner skull plate, indicative of metastatic tumor.

癌脑转移的临床表现因疾病进展和个体差异等因素而异，但 60%~75% 的病人可出现神经症状，其中 10%~20% 的病人可出现癫痫，其他症状包括神经功能障碍、精神状态改变、头痛、共济失调、言语和视力改变等<sup>[6,7]</sup>。本文 2 例主要表现为头痛、头晕。目前，前列腺癌脑转移的诊断主要依靠 MRI、CT 和 PET/CT<sup>[8]</sup>。本文病例 1 术前 MRI 检查示左侧额颞顶部脑膜转移瘤，术后病理检查明确为前列腺来源的恶性肿瘤；病例 2 有前列腺癌病史 9 年，MRI 检查示双侧额部脑膜及邻近颅板占位，术后病理证实为前列腺来源的恶性肿瘤。

前列腺癌硬脑膜转移与脑膜瘤在影像表现上类似，难以鉴别<sup>[9]</sup>。本文两例病人 MRI 表现为 T<sub>1</sub>加权像呈低信号，增强后肿瘤呈现边缘较清晰的不均匀强化。脑膜瘤 T<sub>1</sub>加权像多为低信号或等信号，增强后多呈边缘较清晰的均匀强化，并可见脑膜尾征。然而，恶性脑膜瘤 MRI T<sub>1</sub>加权像以等、低混杂信号多见；可见囊变及出血信号；增强扫描后肿瘤强化不均匀；边缘不规则或呈锯齿状，硬膜尾征呈粗短不规则形；肿瘤侵犯半球呈磨伞征；部分病例向颅内外浸润。本文两例前列腺来源的恶性肿瘤均位于硬脑膜，不易与脑膜瘤相鉴别，特别是恶性脑膜瘤。目前，<sup>68</sup>Ga 标记的前列腺特异性膜抗原（<sup>68</sup>Ga-PSMA）PET/CT 是监测前列腺癌转移最广泛的手段，具有较高的精确性、特异性和扩大观察视野的优势<sup>[10]</sup>。

前列腺癌脑转移的治疗包括手术、分次局部和全脑放射(WBRT)治疗、放射外科、药物系统治疗、姑息治疗或其组合<sup>[8,11]</sup>。目前,对于肿瘤体积较大(>2 cm)和有症状的单发脑转移瘤,手术切除为首选方法<sup>[12,13]</sup>。本文两病例均采用手术治疗。对于全身状况良好、颅外疾病控制较好的单发脑转移瘤,手术切除联合WBRT为一线治疗方案,可延长病人的中位生存期<sup>[14-16]</sup>。然而,WBRT具有神经毒性,临床上越来越多地应用高剂量辐射立体定向放射外科治疗<sup>[17]</sup>。由于药物的中枢神经系统渗透率及其副作用,全身系统疗法目前在前列腺癌脑转移的治疗中无明确作用<sup>[3]</sup>。尽管前列腺癌脑转移可通过手术和放射治疗实现更长期的局部疾病控制,但病人的中位生存期仍然较低,尤其在前列腺癌单发脑转移病人<sup>[18]</sup>。总之,在临床工作中,老年男性脑膜病变鉴别诊断时,应考虑到前列腺来源的可能。对于前列腺癌脑膜转移,如果病人全身状况良好、颅外疾病控制较好,可采用手术切除肿瘤联合术后放化疗,有助于延长病人的生存期。但是,到目前为止,还没有关于特征预测前列腺癌脑转移风险的前瞻性证据的报道。前列腺癌脑转移的病理机制、前列腺癌新治疗方法对脑转移发病率的影响,以及适合于前列腺癌脑转移的系统治疗方案,也是我们今后需要探索的新领域。

**【利益冲突声明】:**本文不存在任何利益冲突。  
**【作者贡献声明】:**贾文学负责病例资料的整理,撰写论文;刘彦廷、朱岳峰负责影像资料解读及图片提供;王吉负责病理资料解读及图片提供;艾文兵、田春雷负责经验分享,论文审阅,最后定稿。

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