

# 播散性隐球菌病在PET/CT上表现类似淋巴瘤一例

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## 摘要

目的: 通过回顾罕见的发生于免疫功能正常患者的播散性隐球菌病案例, 提高临床医生对播散性隐球菌病的认识, 帮助临床今后处理类似的病人。方法: 回顾分析一例主诉为腰背痛伴活动受限的中年女性患者, 临床最初怀疑癌症、 $^{18}\text{F}$ -FDG PET/CT提示淋巴瘤可能, 但最终经病理证实为隐球菌感染。结果: PET/CT显示全身多发高代谢肿大淋巴结并第十胸椎骨质破坏、代谢异常增高, 提示淋巴瘤可能。但随后的胸椎活检证实为隐球菌感染, 血清隐球菌抗原试验呈阳性, 且患者抗真菌治疗后病情明显好转。结论: 播散性隐球菌病与淋巴瘤在 $^{18}\text{F}$ -FDG PET/CT上有时难以区分, 尤其是当患者均表现为全身多发高代谢肿大淋巴结时。PET/CT显像全身成像在显示病变范围和评估疗效方面具有显著优势, 并且能够精确指导临床在合适部位进行活检。

## 关键词

播散性隐球菌病, PET/CT, 淋巴瘤

## A Case of Disseminated Cryptococcosis Resembling Lymphoma on PET/CT

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## Abstract

**Objective:** By reviewing a rare case of disseminated cryptococcosis occurring in immunocompe-

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tent patients, we hope to increase clinicians' awareness of disseminated cryptococcosis and help clinicians manage similar cases in the future. **Methods:** We retrospectively analyzed a case of a middle-aged female patient who complained of back pain and activity limitation. While the patient was initially suspected of having cancer by the clinicians and  $^{18}\text{F}$ -FDG PET/CT suggested the possibility of lymphoma, the biopsies confirmed the diagnosis of disseminated cryptococcosis eventually. **Results:** PET/CT images demonstrated multiple enlarged lymph nodes and osteolytic changes in the tenth thoracic vertebra with abnormal uptake, indicating the possibility of lymphoma. But the following bone biopsies confirmed the diagnosis of disseminated cryptococcosis with a positive serum cryptococcal antigen test, and the patient's condition improved significantly with antifungal therapy. **Conclusion:** Disseminated cryptococcosis is sometimes indistinguishable from lymphoma on  $^{18}\text{F}$ -FDG PET/CT, especially when patients present with multiple hypermetabolically enlarged lymph nodes throughout the body. The whole-body imaging of PET/CT is useful in assessing the involvement of the disease and evaluating treatment effects, as well as guiding clinical biopsies.

## Keywords

Disseminated Cryptococcosis, PET/CT, Lymphoma

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## 1. 引言

新型隐球菌是世界卫生组织病原真菌优先性清单排名第一的真菌疾病, 是一种机会性病原体, 地理分布广泛, 主要来源于环境, 可引起潜在的致命性隐球菌病[1]。隐球菌病是一种机会性感染, 主要影响免疫力低下的宿主, 如糖尿病患者、恶性肿瘤患者、器官移植受者或艾滋病病毒阳性患者[2] [3] [4] [5], 但在免疫力健全的人群中仅有十万分之一的发病率[6]。播散性隐球菌病通常是由原发性肺部感染吸入微小真菌孢子后经血源性传播引起的, 隐球菌肺炎或脑膜炎是最常见的并发症(超过 50%) [1] [7]。虽然其他器官或组织也可能受到感染, 但隐球菌性淋巴结炎和隐球菌性骨髓炎并不常见[8] [9]。

代谢活跃的炎症细胞对  $^{18}\text{F}$ -FDG 的高吸收率在检测微生物引起的炎症反应中发挥了重要作用, 因此  $^{18}\text{F}$ -FDG PET/CT 已逐渐成为一种感染成像剂, 并且常被用于描述疾病的范围[10]。

本文报告了一例罕见的免疫功能正常患者罹患播散性隐球菌感染的病例, 并回顾了相关文献。我们希望通过提供案例信息与回顾, 提高对隐球菌病的认识, 从而帮助临床医生今后处理类似病例。

## 2. 病例资料

一位 55 岁的女性农民无明显诱因突发背部疼痛并活动受限 5 天, 伴双下肢无力, 无发烧、咳嗽、头痛、头晕、发冷、盗汗、恶心或呕吐等症状。否认糖尿病、癌症、艾滋病或免疫抑制治疗史。查体: 胸椎有叩痛, 以第十胸椎(T10)明显。实验室检查: 白细胞计数为  $5.0 \times 10^9/\text{L}$ , 其中中性粒细胞 84.8%, 淋巴细胞 7.4%, 嗜酸性粒细胞 0.2%, CRP 85.7 mg/L, ESR 110 mm/h, 肿瘤标志物和 HIV 抗体均为阴性。影像学检查: 胸部 CT 显示腋窝可见多发肿大淋巴结(图 1(A)), T10 可见不规则溶骨性骨质破坏(图 1(B))。T2 压脂磁共振图像显示, T10 可见斑片状高信号区, 椎体变窄, 同时伴有椎旁软组织肿胀(图 1(C))。

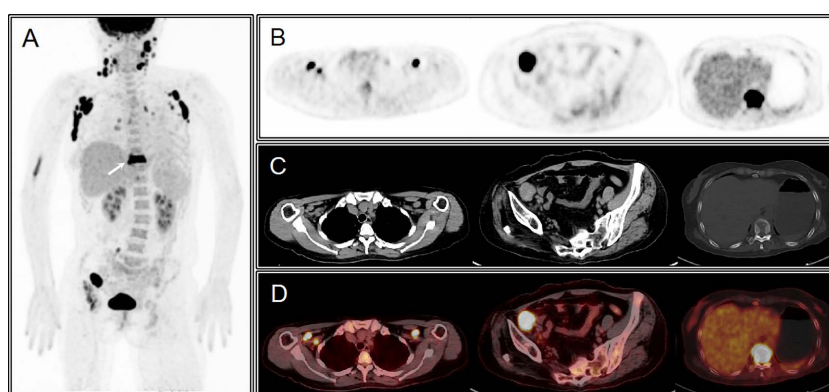
临床医生怀疑患者恶性肿瘤全身多发转移可能, 因此建议她接受  $^{18}\text{F}$ -FDG PET/CT 检查。PET/CT 显示第十胸椎 FDG 摄取异常增高, 同时也观察到全身多处多发高代谢肿大淋巴结(图 2), 提示淋巴瘤可能。

临床根据 PET/CT 所提示的部位, 分别行第 10 胸椎及右颈部淋巴结穿刺活检。病理结果显示: 胸 10 椎体病灶镜下于纤维结缔组织中见肉芽肿性炎及较多量圆形球菌, 未见明显干酪样坏死, 结合特殊染色结果考虑为隐球菌感染; 颈部淋巴结肉芽肿炎。随后的结核分枝杆菌检测为阴性, 同时血清隐球菌抗原检测呈阳性, 隐球菌抗原滴度为 1:160。患者最终被诊断为隐球菌感染, 并开始接受氟康唑治疗。治疗有效, 4 周后症状明显缓解。5 个月后的随访检查显示, 骨质破坏明显修复, 椎旁肿胀软组织已基本吸收(图 3), 血清隐球菌抗原滴度降至 1:5。



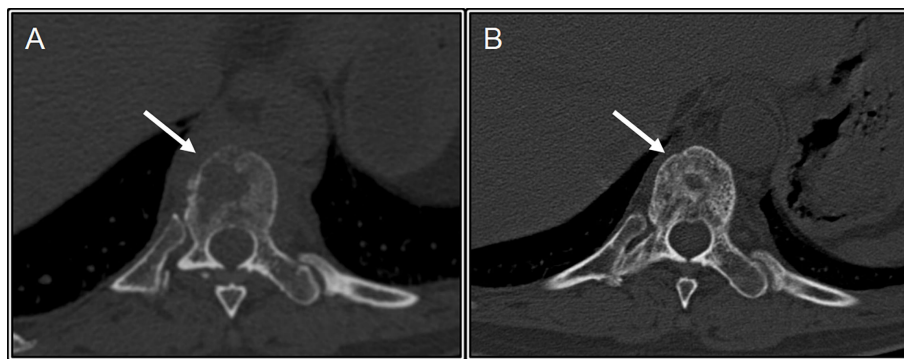
**Figure 1.** (A): Multiple diffuse enlarged lymph nodes in the axilla; (B): Destructive lytic lesions with adjacent soft tissue edema at the tenth thoracic vertebra; (C): Fat-suppressed T2-weighted magnetic resonance imaging images showed patchy abnormal signals at T10 with the vertebral body slightly flattened and paravertebral soft tissue swelling

**图 1.** (A): 腋窝多发肿大淋巴结; (B): T10 可见不规则溶骨性骨质破坏; (C): T2 压脂磁共振 T10 可见斑片状高信号区, 椎体稍变窄伴椎旁软组织肿胀



**Figure 2.**  $^{18}\text{F}$ -FDG PET/CT maximum intensity projection PET (A) and PET (B), transaxial CT (C) and PET/CT (D). Images revealed increased FDG uptake at the tenth thoracic vertebra (white arrow) with the SUVmax measured as 31.2, as well as multiple hypermetabolic lymph nodes in the bilateral neck, bilateral axillary, retroperitoneum, and adjacent to the bilateral iliac vessels with the SUVmax ranged from 8.1 to 32.0

**图 2.**  $^{18}\text{F}$ -FDG PET/CT MIP PET (A) 和 PET (B)、轴位 CT (C) 和 PET/CT (D)。图像显示, 第 10 胸椎(白色箭头) FDG 摄取增加, SUVmax 为 31.2, 双侧颈部、双侧腋窝、腹膜后和双侧髂血管旁见多个高代谢淋巴结, SUVmax 为 8.1 至 32.0



**Figure 3.** Before treatment (A): CT demonstrates a lytic lesion with adjacent soft tissue edema at the tenth thoracic vertebra. After fluconazole therapy (B): Five-month follow-up CT revealed substantial osseous repair of the defect with the swollen paravertebral soft tissue absorbed

**图 3.** 治疗前 (A): CT 显示第十胸椎骨质破坏伴邻近软组织肿胀。氟康唑治疗后 (B): 五个月后的随访 CT 显示, 骨质破坏明显修复, 肿胀的椎旁软组织已基本吸收

### 3. 讨论

新型隐球菌感染可累及多个系统, 最常见的部位是肺和脑膜[11]; 但也可累及眼睛、皮肤、肾脏、前列腺、胃肠道、骨髓和淋巴结[12]-[18]。然而, 主要表现为淋巴结或骨受累而无任何肺部或神经系统表现的病例相当罕见。笔者回顾了相关文献, 目前仅有两例关于隐球菌性淋巴结炎 PET/CT 显像的报道。Tripathy 等[19]报道了一例播散性隐球菌病病例, 患者无肺部或脑膜受累, 表现为膈肌两侧广泛淋巴结受累, 被误诊为淋巴瘤。Zhang 等人[20]报告了一例淋巴结、肺部和皮肤受累的播散性隐球菌病例。在他们的病例报告中, 患者表现为双侧腋窝、纵隔、腹部和盆腔弥漫性高代谢肿大淋巴结, 同时伴有皮肤的高代谢结节, 这与恶性淋巴瘤尤其是累及皮肤的 T 细胞淋巴瘤颇为相似。本例患者由于 PET/CT 提示横膈两侧多发高代谢淋巴结, 因此最初也被怀疑患有淋巴瘤。除此之外, 本例患者还合并有单个胸椎的骨质破坏, 而骨淋巴瘤也可能会出现这种表现, 在结外淋巴瘤中占比约 5%, 在所有骨恶性肿瘤中为 3%~7% [21], 这就加大了诊断的难度。另外, 隐球菌病主要影响免疫力低下的宿主[2], 在本病例中, 患者免疫功能正常, 并非易感人群, 实验室检查亦没有特异性, 仅仅提示炎症改变, 这是非常罕见的。

总之, 我们报告了一例极为罕见的播散性隐球菌感染病例, 该患者免疫功能正常, 出现淋巴结和第十胸椎同时受累。PET/CT 的特点是灵敏度高, 但在面对某些感染性疾病时诊断的特异性则不太理想。我们的病例提示, 当 PET/CT 显示多发高代谢肿大淋巴结时, 除淋巴瘤外, 还应考虑到一些特异性感染。播散性隐球菌病与淋巴瘤在  $^{18}\text{F}$ -FDG PET/CT 上有时难以区分, 尤其是当患者均表现为全身多发高代谢肿大淋巴结时。PET/CT 显像全身成像在显示病变范围和评估疗效方面具有显著优势, 并且能够精确指导临床在合适部位进行活检。

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