*Mol Imaging Radionucl Ther* *DOI:10.4274/mirt.galenos.2024.46667 [Epub Ahead of Print]*

# Nasolacrimal Metastasis from Parotid Ductal Carcinoma Detected by $^{18}$F-FDG PET/CT

## *$^{18}$F-FDG PET/BT ile Parotis Duktal Karsinomu Kaynaklı Nazolakrimal Metastaz Saptanması*

***Kexia Fang[1], Jianqiang Li[1], Guodong Feng[1], Xiang Guo[1], Yumin Zheng[2]***

*[1]Zibo Municipal Hospital, Department of Nuclear Medicine, Shandong, China*
*[2]Beijing Hospital, National Center of Gerontology, Institute of Geriatric Medicine, Chinese Academy of Medical Sciences, Department of Nuclear Medicine, Beijing, China*

### Abstract

A 39-year-old woman presented with left neck masses for 4 months and epiphora of the left eye for 3 weeks. Ultrasonography revealed a mass in the left parotid gland and multiple cervical lymph nodes. Biopsy of the mass in the left parotid gland revealed infiltrating ductal carcinoma. $^{18}$F fluorodeoxyglucose positron emission tomography/computed tomography ($^{18}$F-FDG PET/CT) scan was undertaken, which showed a mass in the left parotid gland and multiple cervical lymph nodes with high metabolism. A nodule in the left nasolacrimal duct with high metabolism was observed. The nodule was surgically removed and pathologically confirmed as metastatic parotid ductal carcinoma.

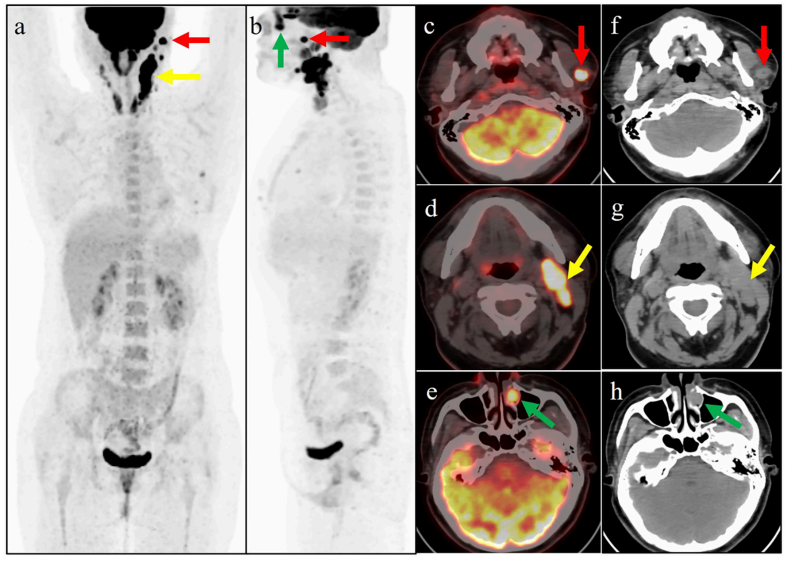
**Keywords:** Nasolacrimal tumor, metastasis, parotid ductal carcinoma, $^{18}$F-FDG, PET/CT

### Öz

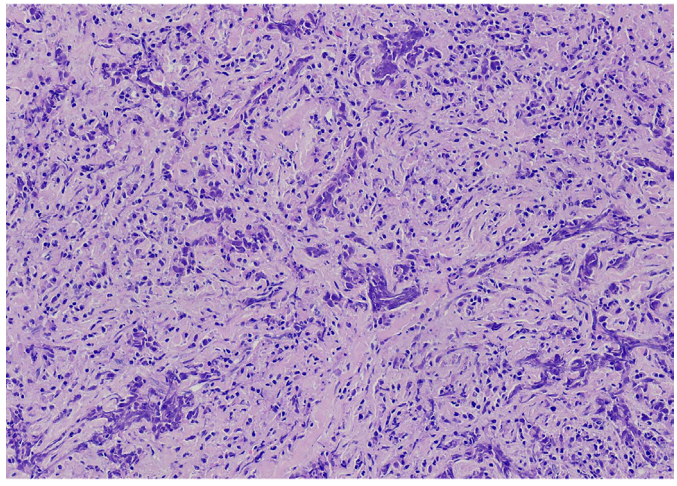
Otuz dokuz yaşındaki kadın hasta 4 aydır boynunun sol tarafında kitleler çıkması ve 3 haftadır sol gözünde epifora şikayeti ile başvurdu. Ultrasonografi sol parotis bezinde kitle ve çok sayıda büyümüş servikal lenf nodu olduğunu ortaya koydu. Sol parotis bezindeki kitlenin biyopsisi infiltre duktal karsinom iyi uyumlu idi. $^{18}$F-florodeoksiglukoz ($^{18}$F-FDG) pozitron emisyon tomografisi/bilgisayarlı tomografi (PET/BT) taraması yapıldı ve sol parotis bezinde kitle ve yüksek metabolizmaya sahip çok sayıda servikal lenf nodu görüldü. Sol nazolakrimal kanalda yüksek metabolizmaya sahip bir nodül gözlendi. Nodül daha sonra cerrahi olarak çıkarıldı ve patolojik olarak metastatik parotis duktal karsinomu olarak doğrulandı.

**Anahtar kelimeler:** Nazolakrimal tümör, metastaz, parotis duktal karsinomu, $^{18}$F-FDG, PET/BT.

**Address for Correspondence:** Yumin Zheng, Beijing Hospital, National Center of Gerontology, Institute of Geriatric Medicine, Chinese Academy of Medical Sciences, Department of Nuclear Medicine, Beijing, China
**Phone:** +86-15810269185 **E-mail:** yuminzhengcn@163.com ORCID ID: orcid.org/0000-0002-5294-4981
**Received:** 29.05.2024 **Accepted:** 21.07.2024 **Epub:** xxxxxxx




**Legend of Figure 1.**
A 39-year-old woman presented with left neck masses for 4 months and epiphora of the left eye for 3 weeks. Ultrasonography revealed a mass in the left parotid gland and multiple cervical lymph nodes. The biopsy pathology of the mass in the left parotid gland revealed infiltrating ductal carcinoma. $^{18}$F-florodeoksiglukoz ($^{18}$F-FDG) pozitron emisyon tomografisi/bilgisayarlı tomografi (PET/BT) scan was then performed for staging. The maximum-intensity projection image (a: anteroposterior) shows some areas of intense $^{18}$F-FDG activity in the left parotid region with an $SUV_{max}$ of 24.0 (red arrow) and the left side of neck with $SUV_{max}$ of 22.3 (yellow arrow). The left lateral MIP image (b) shows a focus of intense activity behind the nose, with an $SUV_{max}$ of 17.3 (green arrow). On the axial images (c-e: fused PET/CT; f-h: CT), the red arrow corresponded well to the mass of the left parotid, the yellow arrow pointed to multiple cervical lymph nodes, and the green arrow corresponded to the nodule of the left nasolacrimal duct, which was surgically removed. Subsequently, the lesion was pathologically and immunohistochemically confirmed as metastatic parotid ductal carcinoma.



**Legend of Figure 2.**
Histologically, the nasolacrimal duct specimen (hematoxylin and eosin stain, original magnification x 200) showing mesenchyma infiltrated by strip-shaped invasive ductal carcinoma cells with the typical feature of irregular nested infiltrate.

The most common clinical symptoms of lacrimal sac and duct tumors are epiphora, recurrent dacryocystitis, epistaxis, and/or lacrimal sac mass. These non-specific clinical manifestations often lead to the misdiagnosis of lacrimal sac tumors such as dacryocystitis (1). Tumors of the lacrimal sac and duct are divided into primary and secondary tumors. Primary malignant epithelial neoplasms include squamous cell carcinoma (SCC), transitional cell carcinoma, adenocarcinoma, adenoid cystic carcinoma, poorly differentiated carcinoma, and primary melanomas (2,3). The most common malignant lacrimal sac tumors are of epithelial origin, with the majority being SCC (4,5,6). Secondary tumors can occur from any cutaneous or paranasal sinus lesion or from distant organs, in the case of metastatic tumors, and may include carcinomas or melanomas (7,8). Our case indicates that metastatic tumors should be considered when high $^{18}$F-FDG accumulation is observed in the nodule of the lacrimal duct, especially when accompanied by other abnormal $^{18}$F-FDG uptake lesions.

## Footnote

**Informed Consent:** Written informed consent has been obtained from the patient.

### Authorship Contributions

Surgical and Medical Practices: J.L., Concept: Y.Z., Design: Y.Z., Data Collection or Processing: G.F., Analysis or Interpretation: Y.Z., Literature Search: X.G., Writing: K.F.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** There were no sources of funding for this work.

## References

1. Lee LN, Scott AR, Chan AW, Frankenthaler RA. Management of transitional cell carcinoma of the lacrimal sac: a multidisciplinary approach to orbit sparing treatment. Laryngoscope. 2010;120(Suppl 4):161.
2. El-Sawy T, Frank SJ, Hanna E, Sniegowski M, Lai SY, Nasser QJ, Myers J, Esmaeli B. Multidisciplinary management of lacrimal sac/nasolacrimal duct carcinomas. Ophthalmic Plast Reconstr Surg. 2013;29:454-457.
3. Subramaniam SS, Anand R, Mellor TK, Brennan PA. Primary Lacrimal Sac Melanoma With Metastatic Cervical Disease: A Review of the Literature and Case Report. J Oral Maxillofac Surg. 2017;75:1438-1441.
4. Zhang R, Qian J, Meng F, Yuan Y, Bai M, Bi Y, Xu B, Yuan Y, Hong R. A Staged Procedure in the Treatment of Primary Lacrimal Sac Epithelial Malignancy: A Retrospective Cases Analysis. Ophthalmic Plast Reconstr Surg. 2019;35:187-192.
5. Song X, Wang J, Wang S, Wang W, Wang S, Zhu W. Clinical analysis of 90 cases of malignant lacrimal sac tumor. Graefes Arch Clin Exp Ophthalmol. 2018;256:1333-1338.
6. Kumar VA, Esmaeli B, Ahmed S, Gogia B, Debnam JM, Ginsberg LE. Imaging Features of Malignant Lacrimal Sac and Nasolacrimal Duct Tumors. AJNR Am J Neuroradiol. 2016;37:2134-2137.
7. Sia KJ, Tang IP, Kong CK, Tan TY. Nasolacrimal relapse of nasopharyngeal carcinoma. J Laryngol Otol. 2012;126:847-850.
8. Ding J, Sun H, Xin Y, Li D. Metastatic hepatocellular carcinoma mimicking acute dacryocystitis. Can J Ophthalmol. 2018;53:132-134.