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Case Report / Olgu sunumu

Adamantinoma-Like Ewing Sarcoma of the Parotid With ESWR1-FLI1 Rearrangement: A Case Report and Review of the Literature

Parotisin ESWR1-FLI1 Yeniden Düzenlenmesi Gösteren Adamantinoma Benzeri Ewing Sarkomu: Olgu Sunumu Ve Literatürün Gözden Geçirilmesi

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Abstract

Adamantinoma-like Ewing sarcoma (ALES) is a rare tumor that shows epithelial differentiation in addition to EWSR1-FLI1 rearrangement. We describe a case of ALES detected as a parotid mass in a 20-year-old woman. This is the ninth case of ALES arising in parotid gland. Histopathologically, the tumor consisted of diffuse pattern and solid sheets of basaloid cells with oval, round nuclei, coarse chromatin and scant cytoplasm. Immunohistochemically, tumor cells were positive with CD99, NKX2.2, p40, pancytokeratin and synaptophysin. Additionally, ESWR1-FLI1 rearrangement was demonstrated with FISH. The diagnosis of ALES may be very challenging due to the potential mimics. The precise diagnosis of ALES depends on both morphologic and immunohistochemical findings and has to be supported by molecular analysis determining EWSR1-FLI1 rearrangement.

Keywords: Adamantinoma-like, Ewing sarcoma, ESWR1-FLI1 rearrangement, parotid

Öz

Adamantinoma benzeri Ewing sarkomu (ALES), EWSR1-FLI1 yeniden düzenlenmesine ek olarak epitelyal farklılaşma gösteren nadir bir tümördür. Burada, 20 yaşında bir kadın hastada parotis kitlesi olarak saptanan bir ALES olgusunu sunuyoruz. Bu, parotis bezinde ortaya çıkan dokuzuncu ALES vakasıdır. Histopatolojik olarak tümör, oval, yuvarlak çekirdekli, kaba kromatinli ve dar sitoplazmalı diffüz paternli ve solid kitleler oluşturan bazaloid hücre tabakalarından oluşmaktaydı. İmmünohistokimyasal olarak, tümör hücreleri CD99, NKX2.2, p40, pansitokeratin ve sinaptofizin ile pozitifti. Ek olarak, FISH ile ESWR1-FLI1 yeniden düzenlemesi gösterildi. Olası taklitçiler nedeniyle ALES tanısı oldukça zorlayıcı olabilir. ALES'in kesin tanısı hem morfolojik hem de immünohistokimyasal bulgulara bağlıdır ve EWSR1-FLI1 yeniden düzenlemesini belirleyen moleküler analiz ile desteklenmelidir.

Anahtar Kelimeler: Adamantinoma benzeri, Ewing sarkomu, ESWR1-FLI1 rearanjmanı, parotis

INTRODUCTION

Ewing sarcoma (ES) is a mesenchymal malignancy with small round cell morphology that has a predilection for bone and soft tissue and mainly affecting children.[1,2] Adamantinoma-like Ewing sarcoma (ALES) is a rare variant of ES that demonstrates the EWSR1-FLI1 rearrangement as well as epithelial differentiation morphologically and immunophenotypically.[3] Although firstly described in long bones, many cases of ALES were reported at head and neck site.[3-5] In the current literature, ten of those cases were originated from salivary glands including parotid and submandibular gland. Of these, eigth tumors were described in parotid.[3]

Herein, in the light of literature, we aimed to present a case of ALES diagnosed in a 20-year-old woman with a parotid mass. To the best of our knowledge, our case is the ninth case of ALES arising in parotid gland. We confirmed the diagnosis by demonstrating EWSR1-FLI1 rearrangement with fluorescence in situ hybridization (FISH).

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CASE REPORT

A 20-year-old woman admitted to hospital with a localized painless swelling standing for 3 months at right preauricular region. On physical examination, a 4×3 cm solid and mobile mass was detected at right parotid gland. There was no palpable lymph node. On ultrasonography, a 3,5×2 cm hipoechoic heterogeneous solid mass was seen at anterior region of right parotid gland. Total parotidectomy was performed.

On macroscopic examination of the excised material, a solid, gray-white colored, encapsulated lesion adjacent to the parotid gland was observed. Microscopic examination of the lesion revealed a tumor infiltrating parotid gland composed of diffuse pattern and solid sheets of basaloid cells with oval, round nuclei, coarse chromatin and scant cytoplasm (**Figure 1A**, **1B**). Tumor cells were positive with CD99 (**Figure 1C**), NKX2.2 (**Figure 1E**), p40 (**Figure 1F**), pancytokeratin (**Figure 1G**) and synaptophysin (**Figure 1H**), but negative with CD3, CD20, TdT, chromogranin, myogenin, WT-1, CD56, calretinin, INSM-1 and high molecular weight keratin. Ki-67 proliferation index was high (**Figure 1D**). Depending on these findings, Adamantinoma-like Ewing sarcoma was the first differential diagnosis. To support the diagnosis, ESWR1-FLI1 reaarangement was demonstrated with FISH. Eighty percent of tumor cells counted on FISH slide revealed ESWR1-FLI1 break-apart signals (**Figure 1I**). So the final diagnosis was 'Adamantinoma-like Ewing sarcoma of parotid gland'.

One month after the initial diagnosis, a positron emission tomography (PET) scan was performed. No residual tumor or distant metastasis were detected on PET. The patient then admitted to oncology department and chemotherapy was began. She is going on uneventfully.

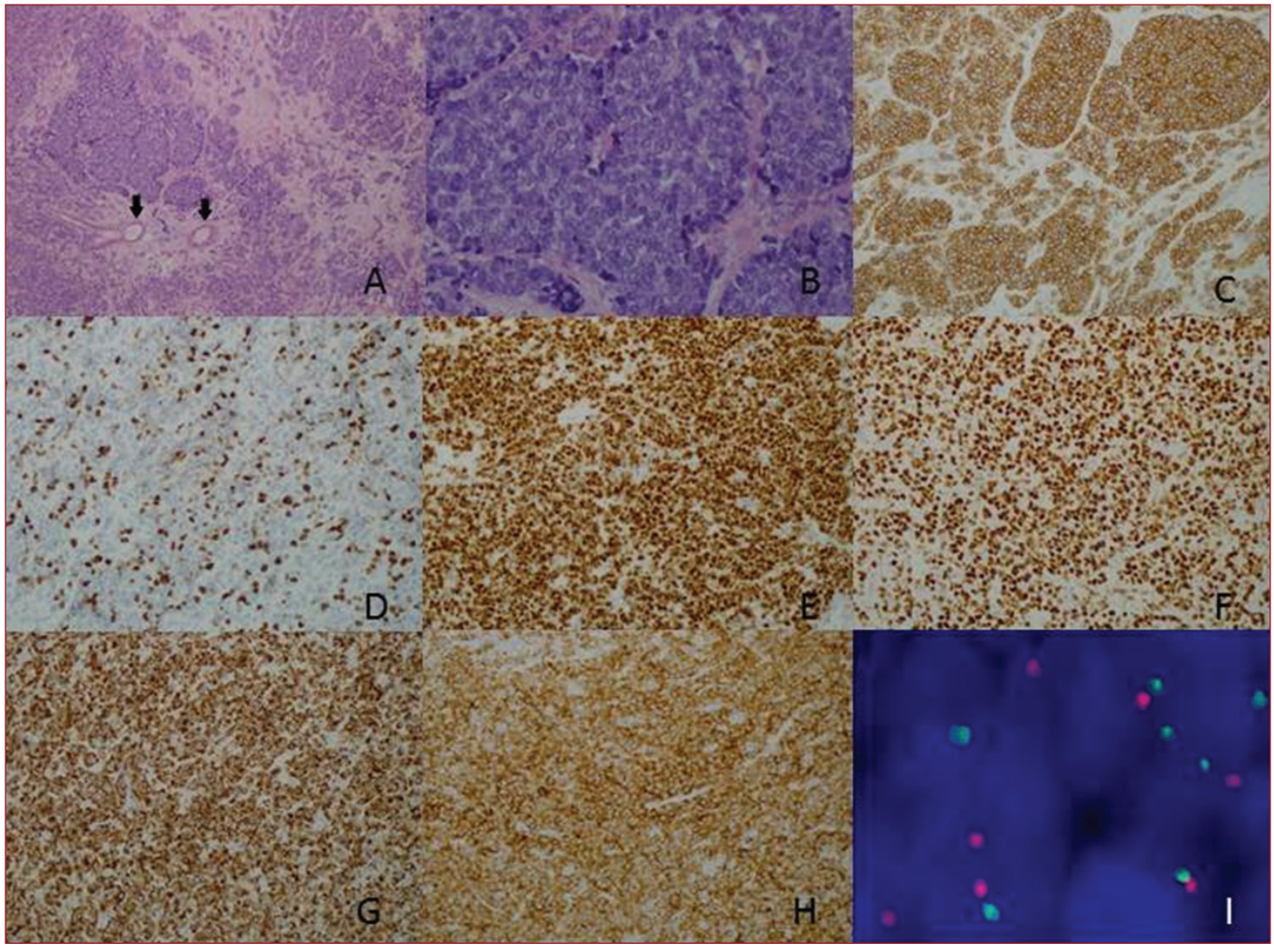

Figure 1:
A: Two salivary gland ductus (arrows) (Hematoxylin-eosin, original magnification, X 100)
B: (Hematoxylin-eosin, original magnification, X 400)
C: (CD99, original magnification, X 200)
D: (Ki67, original magnification, X 200)
E: (NKX2.2, original magnification, X 200)
F: (p40, original magnification, X 200)
G: (Pancytokeratin, original magnification, X 200)
H: (Synaptophysin, original magnification, X 200)
I: Fluorescence in situ hybridization photomicrograph demonstrating EWSR1-FLI1 breakapart signals.

DISCUSSION

ALES, initially described by Bridge et al.[6] in 1999, is an unusual tumor increasingly encountered at head and neck site in recent years.[5] In the current literature, ten cases of ALES were described at salivary glands.[3,5,7] In that region, ALES can mimic many tumors with small round cell morphology as well as basaloid or myoepithelial features. Diagnosis depends on both morphologic and immunohistocehimal features and has to be confirmed by molecular analysis.

In addition to classic small round cell morphology, ALES can show focal or overt keratinization including squamous pearls, palisating of basaloid cells,[3] and exhibit p40 and pancytokeratin expression suggestive of epithelial neoplasms.[7-9] Strong membranous CD99 immuno-positivity may aid to establish differential diagnosis including ALES. Molecular testing indicating the presence of EWSR1-FLI1 rearrangement has to be performed to establish the diagnosis of ALES.[7]

In the literature, the first ALES case in parotid was reported by Lezcano et al.[8] in 2015. In this case, the tumor demonstrated basal cell adenocarcinoma-like morphologic features. In differential diagnosis, they mainly considered basal cell adenocarcinoma and solid patterned adenoid cystic carcinoma of the parotid, and secondly take into account metastatic squamous cell carcinoma (SCC), neuroendocrine tumors, desmoplastic small round cell tumor and hyalinizing clear cell carcinoma. The ALES diagnosis was confirmed by immunohistochemical and molecular tests in addition to morphologic features.

Rooper and Bishop[5] analyzed 23 cases of ALES at head and neck region including eight parotid located ALESs and revealed the morphologic, immunohistochemical and molecular featues of this rare entity. In their case series, only one case was correctly diagnosed as ALES previously.[9] Other tumors was diagnosed as basal cell adenoma, basal cell adenocarcinoma, poorly differentiated carcinoma with basaloid features, high grade neuroendocrine carcinoma and even Merkel cell carcinoma. In this case series,[5] the youngest patient with ALES of the parotid was 32-year-old and the mean age was 47. Our 20-year-old patient is the youngest one reported in the current literature with ALES arising in parotid.

Lilo et al.[9] presented the cytopathologic findings of ALES detected in a 72-year-old male with left parotid mass. In their report, the tumor displayed primitive small round blue cell morphology admixed with groups of epithelioid cells with amphophilic cytoplasm and focal squamous differentiation. They emphasized that cytopathologists need to be aware of and consider this entity in the differential diagnosis of a lesion with this appearance and include CD99 and/or FLI1 in the immunohistochemistry panel.

Kikuchi et al.[10] reported ALES of soft tissue arising in the neck and associated with the vagus nerve in an 11-year-old girl. The tumor demonstrated a biphasic growth pattern consisting of epithelioid nests and spindle cell components. They suggested consideration of the subtype of ES with epithelial differentiation can occur in the neck of young people and can mimic other types of carcinoma such as SCC with unknown primary or malignant salivary gland tumors.

CONCLUSION

We described the ninth and the youngest case of ALES arising in parotid and briefly discussed some of the previously reported cases. We consider pathologists must be aware of this rare entity and take into account in differential diagnosis of tumors with small round cell morphology accompanied by epithelial features. It must be kept in mind that precise diagnosis of ALES depends on both morphologic and immunohistochemical findings and has to be supported by molecular analysis determining EWSR1-FLI1 rearrangement.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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