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Parotis Bezine İnfiltratif Duktal Karsinom Metastazı: Difüzyon Ağırlıklı MRG ve Histopatolojik Özellikleri

Parotid Gland Metastasis of Infiltrating Ductal Carcinoma: Diffusion Weighted Magnetic Resonance Imaging and Histopathological Features

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ÖZ

Burada, parotis bezi de dahil olmak üzere multipl metastazları bulunan infiltratif duktal meme karsinomlu olgunun, parotis bezindeki kitleye yönelik radyolojik ve histopatolojik bulguları sunuldu. Parotis bezindeki kitlenin görünüşteki difüzyon katsayısı (ADC) değeri, lezyonun histopatolojik incelemesinde izlenen hipersellüler stroma ile uyumlu olarak saptandı. Düşük ADC değerinin varlığı maliniteye işaret edebilir ve ayırıcı tanıya katkı sağlayabilir.

Anahtar Kelimeler: Tükrük bezi, infiltratif duktal karsinom, metastaz, manyetik rezonans görüntüleme, ADC

ABSTRACT

In this report, we aimed to present the radiological and histopathological features of parotid gland metastasis in a patient with metastatic infiltrating ductal carcinoma. The apparent diffusion coefficient (ADC) value of this lesion was found to be low and this finding was compatible with hypercellular stroma proven by histopathologically. Presence of low ADC value may be an indicator for malignancy and contributes to differential diagnosis.

Keywords: Salivary gland, infilrating ductal carcinoma, metastasis, magnetic resonance imaging, ADC

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INTRODUCTION

Parotid gland metastases of malignant tumours are extremely rare. These metastases most commonly occur by lymphatic spread; particularly by squamous cell types. Hematogenous metastases are less seen and the metastasis of breast cancer to the parotid gland has been reported in a few study (1,2). Here, we defined the diffusion weighted magnetic resonance imaging (DWI) findings of a patient with infiltrating ductal carcinoma metastasis to the parotid gland and correlated the radiological findings with histopathological examinations. Furthermore, we also discussed the diagnostic importance of DWI in the evaluation of parotid gland metastases.

CASE PRESENTATION

A 38-year-old woman with previously operated breast cancer applied to our hospital suffering from a painful mass in the left parotid gland for 2 months. She had undergone modified radical mastectomy because of infiltrating ductal carcinoma 6 years ago. Multiple bone and lung metastases were found on radiological screenings. A parotid mass with central necrosis and peripheral enhancement were detected by contrast-enhanced computerized tomography (CECT).

DWI was performed by using a 1.5 T magnetic resonance imager (Siemens Magnetom Symphony Quantum, Erlangen, Germany) with a head coil before incisional biopsy was done. The b values were found to be 0, 500 and 1000 s/mm^2. DWI exhibited the mass localized on the superficial lobe of left parotid gland, spreading to the deep lobe **(Fig. I)**. The lateral component of the mass showed increased diffusion which was characterized by signal features of hypointense on diffusion weighted image, hyperintense on the apparent diffusion coefficient (ADC) map. The anterior, posterior and medial components showed restricted diffusion which was characterized by signal features of hyperintense on diffusion weighted image, hypointense on ADC map. The DWI revealed the lateral component as hypocellular and the other components

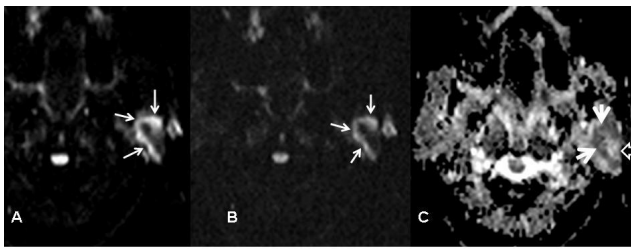

Figure I: The left parotid gland metastasis of infiltrating ductal carcinoma: The lesion shows signal features of hyperintense (arrows) on diffusion weighted images obtained with 500 s/mm^2 b value (A) and 1000 s/mm^2 b value (B); hypointense (thick arrows) on ADC map (C). The ADC value of the lesion was 1.09 x 10^{-3} mm^2/s. There is an increased diffusion area (hollow arrow) seen as hyperintense at the lateral component of lesion (C). This is considered as tumour necrosis.

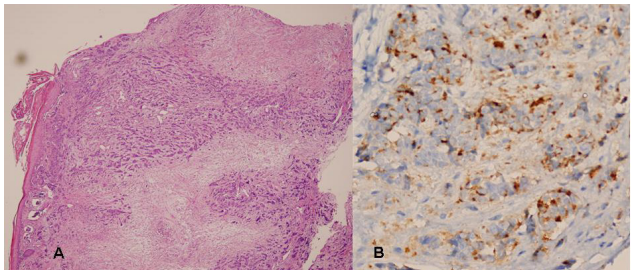

Figure II a. The left parotid gland metastasis of infiltrating ductal carcinoma: The lesion shows signal features of hyperintense (arrows) on diffusion weighted images obtained with 500 s/mm^2 b value (A) and 1000 s/mm^2 b value (B); hypointense (thick arrows) on ADC map (C). The ADC value of the lesion was 1.09 x 10^{-3} mm^2/s. There is an increased diffusion area (hollow arrow) seen as hyperintense at the lateral component of lesion (C). This is considered as tumour necrosis.

as hypercellular. A region of interest (ROI) was localized on the area which was showed restricted diffusion on ADC map. The ADC value was measured as 1.09 × 10^{-3} mm^2/s.

Pathological examination of the incisional biopsy specimen was compatible with metastatic infiltrating ductal carcinoma. The histopathology revealed atypical epithelial changes with hyperchromatic nucleus, eosinophilic cytoplasm on the desmoplastic stroma. Most of the tumour cells showed positive nuclear immunoreactivity for GCDFP-15 (Gross cystic disease fluid protein-15), estrogen and progestrone receptors in immunohistochemical staining **(Fig. II)**.

DISCUSSION

Metastases to parotid gland mostly occur by lymphatic spreading and squamous cell carci-

nomas of forehead, temple or ear are the most common tumours spread by this way. Malignant melanoma is another tumour that spreads by lymphatic system. Hematogenous metastases to parotid gland are more rarely seen. Renal cell carcinoma, lung carcinoma and retinoblastoma are mostly spread hematogenously. Although breast cancer metastasis to parotid gland is rare and it has been reported in a few studies (1-3).

Breast cancer is the most common cancer among women. Infiltrating ductal carcinoma constitutes the large majority of infiltrative breast cancers where as invasive lobular carcinomas are less common. Breast cancer metastases are commonly located on regional lymph nodes however bone, lung and liver metastases occur by hematogenous spreading. Abrams reported only one parotid gland metastasis among 167 metastatic breast cancer cases at the autopsy series (4).

Hypercellular tissues show restricted diffusion due to narrowing in the extracellular space while hypocellular tissues with enlarged extracellular space show free diffusion (5). The nucleo-cytoplasmic ratio and cellular density effect the ADC value in tumours. Moreover, the inverse relation between ADC value and the tumour cellularity have been shown in the literature. According to this, the usage of DWI in head and neck, breast, musculoskeletal system, abdomen and pelvis has been broadened recently. There are so many studies reported the effectiveness of DWI in the detection and characterization of parotid gland tumours, head and neck tumours by revealing the metastatic lymph nodes and evaluating the treatment response without the need of contrast-media (6-9). Yerli et al. (10) and Matsushima et al. (11) reported the ADC value for malignant parotid gland masses, including metastases, as $1.04 \pm 0.35 \times 10^{-3}$ mm^2/s and $1.09 \pm 0.34 \times 10^{-3}$ mm^2/s, respectively.

The parotid gland lesion in our case showed restricted diffusion in DWI and this finding was supported by histopathological examination reported as desmoplastic stroma. Additionally, the ADC value of the lesion was measured as 1.09×10^{-3} mm^2/s which was low owing to the hypercellular stroma. This is also supported by the previously reported studies.

CONCLUSION

Presence of low ADC value calculated by DWI may provide a contribution to the differential diagnosis of malignancies as a malignancy indicator. However, it has no effect on the distinction of metastases from primary tumours.

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