Castration-resistant prostate cancer with metastasis to external auditory canal – Case report

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ABSTRACT

We report a case of castration-resistant prostate cancer metastasis to an external auditory canal. A 68-year-old man was diagnosed with prostate cancer (cT3aN1M1b GS5+5). Although abiraterone, docetaxel, and cabazitaxel were administered, and PSA decreased, liver metastasis appeared. Hearing loss in the left ear was also noted and the patient was referred to an otolaryngologist for an examination, which showed a neoplastic lesion in the external auditory canal. Biopsy findings resulted in a diagnosis of adenocarcinoma. Presented here are details of a rare case of prostate cancer with metastasis to an external auditory canal.

1. Introduction

Few cases of prostate cancer metastasis to an external auditory canal have been reported. Presented here are details of a patient with castration-resistant prostate cancer that later showed external auditory canal metastasis.

2. Case report

A 68-year-old man visited a local doctor for gross hematuria, who then referred the patient to our hospital for examination and treatment. Findings of a rectal examination included stony hardness and a prostate specific antigen (PSA) level of 84 ng/ml, thus a transperineal prostate biopsy was performed and the results indicated adenocarcinoma, GS 5+5 = 10. Furthermore, contrast-enhanced computed tomography (CT) revealed areas of metastasis in the pararenal aorta, common iliac, and left external iliac lymph nodes, while bone scintigraphy also showed metastasis in the left iliac and vertebrae. As a result, the patient was diagnosed with prostate cancer, cT3aN1M1b, and treatments with abiraterone and degarelix were started. During the first three months of treatment, the lowest prostate-specific antigen (PSA) level was 1.9 ng/ml, while four months after the initial diagnosis was obtained, that level was found to be elevated, indicating disease progression. Testosterone was below the level of detection and castration-resistant prostate cancer was diagnosed. Docetaxel was started and PSA decreased from 2.6 to 0.37 ng/ml. Thereafter, PSA showed a gradual increase, though imaging indicated that to be withing the limits of standard deviation and docetaxel was continued. Nevertheless, after 11 courses of docetaxel, PSA showed an increase to 4.1 ng/ml and the disease was considered to have progressed, with peripheral neuropathy also appearing as a side effect, thus cabazitaxel administration was started.

At the same time, back pain symptoms associated with sacral metastasis worsened and stereotactic body radiation therapy (SBRT) was performed. After five courses of therapy, the PSA level showed a decrease to 3.2 ng/ml, however, liver metastasis was revealed by contrast-enhanced CT scan findings and the disease was judged to have again progressed. Bone scintigraphy mainly showed metastasis in the pelvis and vertebrae, with none found in the skull. Additionally, carcinoembryonic antigen (CEA) and neuron-specific enolase (NSE) levels were elevated to 201.5 and 47.2 ng/ml, respectively, suggesting a neuroendocrine tumor. Symptoms indicating hearing loss also appeared at this time and the patient was referred to the Department of Otorhinolaryngology of our hospital for a thorough examination, where CT findings revealed a mass lesion in the left external auditory canal (Fig. 1). A histological examination of the tumor in the external auditory canal was performed, which resulted in a diagnosis of adenocarcinoma as metastasis of prostate cancer (Fig. 2). Neuroendocrine degeneration was also suspected, thus prostate and liver biopsy procedures were performed again, and histological results of those specimens also indicated that the lesion was an adenocarcinoma. Subsequently, the patient was presented with symptoms including headache and facial paralysis, and magnetic resonance imaging (MRI) results confirmed facial nerve compression, along with extension to the inner ear and metastasis in the cerebral concha (Fig. 3). SBRT was again considered as a treatment
method for the metastasis to the external auditory canal. However, due to decreased performance status noted in the patient, it was decided to perform follow-up examinations and he was mainly treated with palliative therapy. Two weeks following the diagnosis of ear canal metastasis, the patient died and a PSA level of 3.7 ng/ml was noted.

3. Discussion

The most common sites of prostate cancer metastasis are recognized to be bone and lymph nodes, while atypical locations, including the brain, liver, and lungs, are rare. Additionally, cancer in an external auditory canal is uncommon, though can be either primary or metastatic. The most common type of primary cancer in these cases is squamous cell carcinoma, while primary malignancies include salivary gland carcinoma, parotid adenocarcinoma, and skin tumors, such as basal cell carcinoma and malignant melanoma. Since metastasis to the ear is rare, reports regarding such incidence are very limited. Cumberworth et al. reviewed 165 cases of distant metastasis to the ear, including temporal bone, middle ear, and outer ear, and reported that metastatic breast cancer was the most common, followed by lung, prostate, and kidney cancer. However, those reports of prostate cancer included cases with metastasis to temporal bone. In the present case, bone scintigraphy performed immediately before the onset of metastasis to the external auditory canal did not show metastasis to temporal bone. In another study, Shrivastava et al. reported direct metastasis to an external auditory canal without temporal bone metastasis and the chief complaint was hearing loss.

For direct metastasis to an external auditory canal, two pathways have been identified, vascular and perineural, and those in combination can also be affected. Because of the limited number of reports of prostate cancer metastasis to an external auditory canal, a standard treatment protocol has yet to be established. A report presented by an otorhinolaryngology department of another hospital in Japan noted that a patient with facial nerve palsy associated with temporal bone metastasis from prostate cancer had hearing loss that showed improvement after performance of radiation therapy. As for the present patient, consultation with the Department of Otorhinolaryngology at our hospital led us to consider SBRT as a potential option. However, by that time his general condition had worsened, which made it difficult to perform aggressive treatment. Although the present is a rare case, should symptoms such as hearing loss or facial nerve palsy appear during treatment for prostate cancer, it is important to consider metastasis to the external auditory canal as a possibility, and an otolaryngologist should be consulted to perform an imaging study and then SBRT considered as an option.

Approval of research protocol by an institutional reviewer board

Not applicable.

Informed consent

Informed consent for publication of the present case details was obtained from the patient.
Registry and registration number of study/trial

Not applicable.

Declaration of competing interest

None of the authors have conflicts of interest to declare.

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