



# Unexpected response of extramedullary plasmacytoma in patients with lung cancer who received nivolumab

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Dear Editor,

Extramedullary plasmacytomas account for approximately 3% of plasma cell malignancies that occur mainly in the head and neck [1, 2]. There are no established treatments for patients with extramedullary plasmacytomas; decision to select surgery, radiation, or chemotherapy is made depending on the condition of the tumor. Whether anti-programmed cell death-1 (PD-1) antibody has a clinical effect in patients with extramedullary plasmacytomas remains unclear. Here, we present a patient with synchronous neoplasms with advanced lung cancer and solitary extramedullary plasmacytomas who received anti-PD-1 antibody.

A 78-year-old Asian man, with a history of chemotherapy and radiation for extramedullary plasmacytoma confined to the nasal cavity, was referred to our hospital because of chest abnormal shadow. Diagnostic bronchoscopy revealed squamous cell carcinoma (SCC) in the right lung. Right upper lobectomy and lymph node dissection were performed; diagnosis was SCC with stage IA (pT1bN0M0). After 33 months from surgery, enlargement of a single mediastinal lymphadenopathy was observed; therefore, chemotherapy plus thoracic radiotherapy was performed. After 2 months from chemoradiotherapy, the patient complained of nasal bleeding; facial computed tomography (CT) revealed marked growth of the intranasal tumor (Fig. 1). He was treated with carfilzomib and dexamethasone for recurrence of extramedullary plasmacytoma. After 10

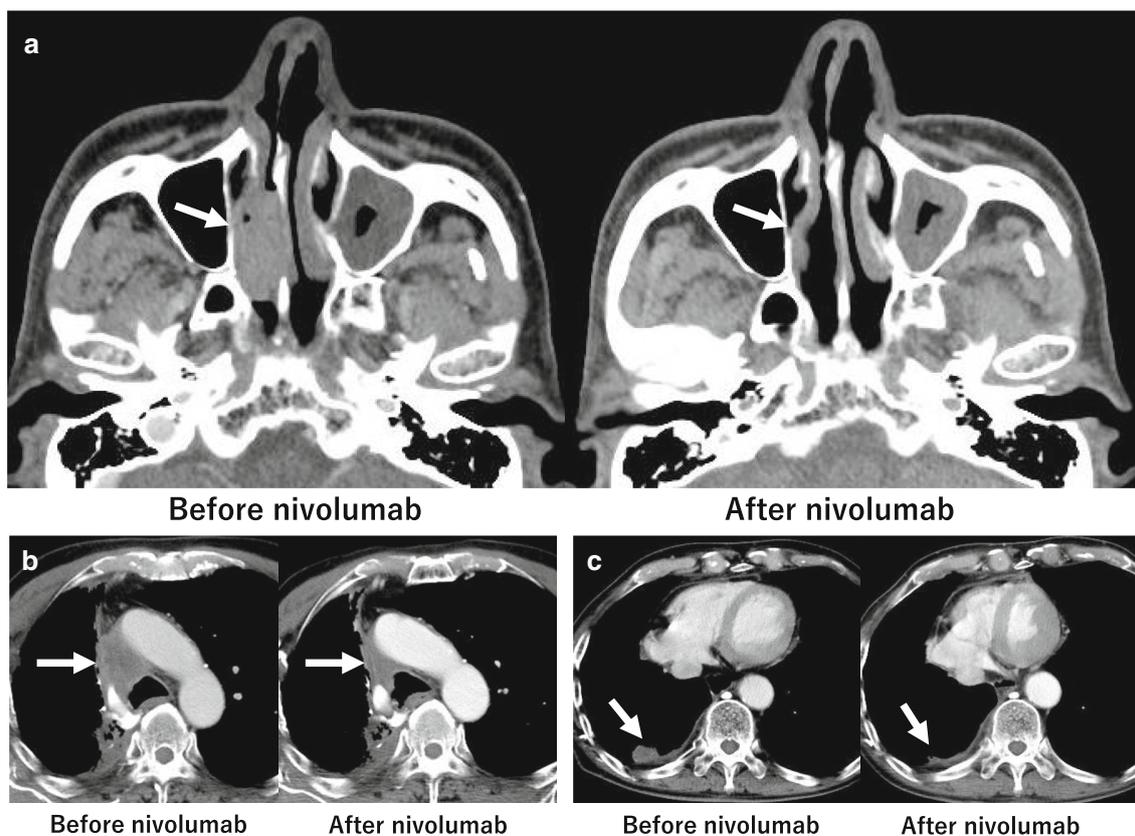
months from chemoradiotherapy, enlargement of the mediastinal lymphadenopathy and multiple pulmonary metastases indicating recurrence of pulmonary SCC were observed. Mediastinal lymph nodes highly compressed the superior vena cava (SVC), with facial and upper limbs edema. Furthermore, the marked regrowth of intranasal tumors due to extramedullary plasmacytoma was accompanied by a high degree of nasal closure. Nivolumab (3 mg/kg) was administered for recurrent pulmonary SCC. Nasal closure and facial and upper limbs edema due to SVC occlusion improved immediately after nivolumab administration. Facial and chest CT revealed marked shrinkage of nasal and thoracic tumors (Fig. 1). After 8 months from nivolumab administration, the patient continues to receive treatment without any recurrence and severe adverse events.

To our knowledge, this is the first report to show the therapeutic effect of nivolumab on extramedullary plasmacytoma. Nivolumab's therapeutic effect on extramedullary plasmacytoma has been successfully confirmed. Moreover, reports regarding patients with extramedullary plasmacytoma and pulmonary SCC are few [3]. In a phase I study of nivolumab in patients with relapsed or refractory hematologic malignancy, one of the 27 patients with multiple myeloma had complete remission (CR), and 63% (17/27) reached stable disease [4]. After the patient with CR underwent radiation of the rib lesion due to plasmacytoma, nivolumab was restarted; subsequent therapeutic response was identified as CR [4]. In the present case, nivolumab was administered after thoracic radiotherapy for lung cancer. A recent study has demonstrated that previous radiotherapy significantly improved survival and response rate after nivolumab treatment [5]. Our case suggests that a synergistic effect of previous radiotherapy and nivolumab is a promising combination in patients with relapsed extramedullary plasmacytoma. Physicians should be mindful of the various treatment options for patients with relapsed or refractory extramedullary plasmacytoma.

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**Fig. 1** Computed tomography (CT) findings of nasal extramedullary plasmacytoma and pulmonary squamous cell carcinoma before and after nivolumab treatment. Facial and chest CT showing shrinkage of the right

nasal mass (white arrow) (a), mediastinal lymphadenopathy (white arrow) (b), and pulmonary metastasis (white arrow) (c) before and after nivolumab treatment

## Compliance with ethical standards

**Conflict of interest** OY has received speaker honorarium from Ono Pharmaceutical Company and Bristol-Myers Company. KK has received speaker honorarium from Ono Pharmaceutical Company and Bristol-Myers Company. YN has received speaker honorarium from Ono Pharmaceutical Company and Bristol-Myers Company. HK has received speaker honorarium from Ono Pharmaceutical Company and Bristol-Myers Company.

**Ethical approval** All procedures performed studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from the patient in this case report.

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