

From Unresectable to Resectable: The First Reported Case of Major Pathological Response and Successful Surgery in NUT Carcinoma



Following First-Line Chemo-immunotherapy

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INTRODUCTION

Nuclear Protein in Testis (NUT) carcinoma is an exceedingly rare and aggressive malignancy with a dismal prognosis and a median survival of less than seven months. Characterized by an "immunologically cold" tumor microenvironment with low PD-L1 expression and low tumor mutational burden, the efficacy of first-line immune checkpoint inhibitors (ICIs) in NUT carcinoma remains largely uncharacterized.

Discussion

This is the first reported case of advanced NUT carcinoma achieving MPR and undergoing successful surgical resection following first-line chemo-immunotherapy. Our findings suggest that the combination of platinum-based chemotherapy and PD-1 blockade may offer additional clinical benefits for NUT carcinoma.

CONCLUSION

This multi-modal approach, integrating systemic therapy with local consolidation, offers a promising new therapeutic paradigm for NUT carcinoma.

Case Presentation

A 69-year-old male with a heavy smoking history was diagnosed with metastatic primary thoracic NUT carcinoma (cT4N3M1b, Stage IVA). Tomography/computed tomography (PET/CT) revealed a 77*46*60 mm mass in the right lower lobe near the hilum, measuring accompanied by multiple metastases including a metastatic lesion in the mid-shaft of the right femur. Fluorescence in situ hybridization demonstrated a rearrangement of the NUT gene at the 15q14 locus and next-generation sequencing identified an ERCC2 mutation, while PD-L1 expression was <1%. The patient received first-line chemo-immunotherapy consisting of Nab-paclitaxel, Carboplatin and Tislelizumab. After six cycles, PET/CT demonstrated a profound systemic response, with the primary thoracic lesion had regressed to 18*10 mm and metabolic activity in the femoral lesion had markedly diminished. Table 1 summarizes the changes in patient lesions before and after treatment. Subsequently, the patient underwent video-assisted thoracoscopic surgery for right lower lobectomy. Postoperative histopathology confirmed a major pathological response (MPR), with only 5% viable tumor cells remaining following consolidative radiotherapy to the residual nodal and femoral metastases.

Timepoint / Location	BaselineSize (cm)	Baseline Metabolism (SUVmax)	4 months later Size (cm)	4 months later Metabolism (SUVmax)
Primary Lesion				
Lower lobe of right lung	7.7 * 4.6 * 6.0	17.6	1.8 * 1.0	1.8
Mediastinal Lymph Node Groups				
1 (Low cervical, supraclavicular, sternal notch)	R: 0.5 * 0.4	3.9	/	/
2 (Paratracheal)	R: 3.1 * 3.0	26	0.8 * 0.7	/
3 (Prevascular & Retrotracheal)	P: 2.2 * 1.6	16.1	/	/
4 (Lower paratracheal)	R: 3.4 * 2.6	26	1.4 * 1.4	3.4
7 (Subcarinal)	3.5 * 3.2	16.2	1.2 * 0.8	2.2
8 (Paraesophageal)	R: 1.7 * 1.5	12.3	/	/
10 (Hilar)	R: ill-defined	18.5	1.4 * 1.0	3
11-14 (Interlobar & Peripheral)	R: ill-defined	12.8	/	/
Other Sites				
Right lung nodule	0.8 * 0.7	4.5	0.4 * 0.4	/
Right pleural thickening	2.1 * 2.0	18.5	Thickness 0.4cm	/
Right femoral lesion	/	26.8	/	2.6

