

## Letter to the Editor

### An exceptional response to nivolumab in relapsed and refractory malignant mesothelioma

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Dear Editor,

Malignant pleural mesothelioma (MPM) is a rare, highly lethal form of cancer.<sup>[1]</sup> At present, there are no food and drug department-approved second-line therapies for MPM in palliative settings. Vinorelbine with gemcitabine is typically used as salvage therapy after failure of cisplatin–pemetrexed-based therapy, but response rates are low (~10%) and have a treatment-limiting side effect profile for many patients.<sup>[2]</sup> Checkpoint inhibition in MPM has remained an area of intense interest due to the overall weight of preclinical data, their utility in other highly aggressive malignancies, the many therapeutic targets within the immune cascade, and the emerging encouraging responses of checkpoint

inhibition in MPM studies.<sup>[3]</sup> Our patient is a 41-year-old female with no habits no comorbidities and family history of cancer. She presented with pain in the upper back for which she was evaluated to have MPM with metastasis to bone (right iliac bone, sacroiliac joint, and ischial bone). She was administered four lines of chemotherapy with two cycles of carboplatin and paclitaxel, three cycles of pemetrexed–carboplatin and bevacizumab, three cycles of single agent topotecan, and three cycles of vinorelbine; none of them showed promising activity with disease progressing with each subsequent treatment. Post-fourth line of chemotherapy, there was pleural-based lesion of 7.2 cm, new brain metastasis, appearance of new mediastinal node, and pleural effusion. Her disease progressed rapidly, and she became significantly debilitated requiring continuous supplemental oxygen. The patient and relatives were very keen on exploring checkpoint inhibitors in view of emerging data available. She was started on nivolumab 240 mg (3 mg/kg)

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every 14 days in our tumor board on compassionate grounds based on limited clinical data. Her performance status improved to ECOG performance status 1 and her requirements of supplemental oxygen therapy drastically reduced with subsequent cycles, and by the end of 3<sup>rd</sup> cycle, she did not require supplemental oxygen. Computed tomography scan done at 12 weeks showed partial response with pleural mass reduced to 3.5 cm [Figure 1]; she has completed 24 cycles of nivolumab with sustained response. She tolerated the regimen well with Grade 2 hypothyroidism (CTCAE Ver 4.03) requiring 50 µg levothyroxine supplementation as well as a low-grade elevation of his serum lipase, but no evidence of hepatitis or pancreatitis could be found and required no intervention.<sup>[4]</sup> At the time of this writing, she remains active and disease controlled more than 24 months after malignant disease was diagnosed.

There remains a substantial need for alternative approaches to MPM therapy as outcomes with traditional chemotherapy regimens remain disappointing at best, with high failure rates and significant side effect profiles. Here, we report a case of a patient with MPM who experienced rapid disease progression after standard chemotherapy, but had an exceptional and sustained response to immune checkpoint inhibition with single-agent nivolumab. Further studies may provide insight into the role of this treatment in the management of MPM.

#### Declaration of patient consent

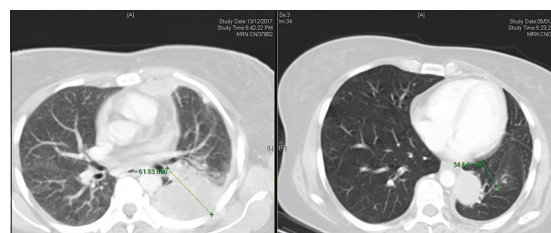
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.



**Figure 1:** Before start of nivolumab pleural based mass in the left upper lobe measures 6.4 cm x 3.5 cm reduced to 3.5 cm x 2.0 cm current size

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