**SUPPLEMENTARY RESULTS**

**Patient summaries**

*Patient summary 1*

A woman aged 57 years with metastatic NSCLC with adenocarcinoma histology was diagnosed with metastatic disease in May 2012. She received 1L carboplatin, paclitaxel, bevacizumab, and the experimental study drug MEGF0444A (anti–epidermal growth factor-like domain 7 monoclonal antibody), with a best response of stable disease. She subsequently received 2L vinorelbine and had a best response of stable disease.

At the start of avelumab treatment, the patient had target lesions in the lung, pleura, lymph nodes, and liver and non-target lesions in lymph nodes and bone. Following the first dose of avelumab in January 2014, she had a partial response in target lesions at first assessment, which was confirmed in a subsequent visit in March 2014. Starting from the first dose of avelumab, the patient developed intermittent diarrhea lasting 6 months (until cycle 13), which reached grade 2 at its peak and was managed with short courses of steroids and a temporary drug interruption. Following pelvic radiotherapy for bone metastases, the patient developed radiation colitis in October 2015 with diarrhea that was positive for *Clostridium difficile*, which was considered unrelated to avelumab treatment. In December 2015 (≈2 years after starting avelumab), the patient developed progressive disease due to new brain and bone lesions; she received local radiotherapy and remained on avelumab treatment. Five additional brain lesions developed between April 2016 and October 2018, which were all treated with local radiotherapy and surgery. She continued to receive avelumab treatment, and partial response was maintained in target lesions until last follow-up (June 2020; >6 years of treatment), with further local radiotherapy administered for non-target lesions.

*Patient summary 2*

A man aged 69 years with NSCLC adenocarcinoma had been diagnosed with metastatic disease in September 2010, had received 1L pemetrexed, carboplatin, and bevacizumab, and had a best response of partial response until progressive disease developed in December 2013.

At the start of avelumab treatment in April 2014, target lesions were present in his cervical lymph nodes; no non-target lesions were present. After 19 weeks of treatment with stable disease (November 2014), the patient developed progressive disease in one lymph node and received palliative radiotherapy with continued avelumab treatment. Avelumab was well tolerated for >3.5 years of treatment, with no treatment-related adverse events of grade >1 reported. Avelumab was discontinued in February 2018 due to a grade 2 treatment-related adverse event of increased creatinine associated with nephrotoxicity, and no subsequent anticancer treatment was administered. At last follow-up (June 2019), the patient was alive with ongoing clinical benefit (no tumor worsening) maintained for ≈4.5 years after initial determination of progressive disease.

*Patient summary 3*

A female patient aged 59 years, a former smoker, was diagnosed with metastatic NSCLC adenocarcinoma in August 2010. She had received 5 prior lines of therapy (no immunotherapies), including 1L chemoradiotherapy, and had developed several new metastatic lesions in different sites. The best response to prior therapy was partial response. The tumor was PD-L1+ (≥1% of tumor cells) and negative for EGFR and ALK mutations.

The patient was enrolled into the JAVELIN Solid Tumor study in May 2014. At baseline, she had a liver lesion (55 mm), adrenal lesion (31 mm), non-target lesions in lymph nodes and pleura, and a pericardial effusion. Following initiation of avelumab on June 3, 2014, the patient achieved a partial response at first assessment (6 weeks), followed by further tumor shrinkage of target lesions to a nadir of 19 mm after ≈8 months. Treatment was well tolerated, with an immune-related adverse event of hypothyroidism being the only notable toxicity. After ≈19 months of treatment, target lesion size increased by 5 mm compared with nadir, which qualified as progressive disease per RECIST; however, avelumab treatment was continued due to evidence of continued clinical benefit. After >5 years (as of November 2019), the patient remained on avelumab treatment (143 cycles), living a normal life with no signs or symptoms, nor clinical or radiographic evidence, to suggest metastatic lung cancer, and with no ongoing adverse events.

*Patient summary 4*

A man aged 64 years with metastatic NSCLC adenocarcinoma had been diagnosed previously in October 2011 (tumor stage T1bN0M0) and had undergone surgery followed in July 2014 by lung radiotherapy. He was diagnosed with metastatic NSCLC in January 2015.

In June 2015, at the start of avelumab, which was given as 1L treatment, the patient had a target lesion in the lung and non-target lesions in the lung and mediastinal lymph nodes. He developed progressive disease per RECIST 1.1 in April 2016 due to an increase in the target lesion, while non-target lesions were persistent. The patient remained on avelumab treatment and subsequently had target lesion shrinkage and continued clinical benefit (no tumor worsening). He experienced grade 3 treatment-unrelated hypertension and pneumothorax but continued to receive avelumab. Avelumab was temporarily interrupted following treatment-unrelated grade 3 pneumonia. The patient continued avelumab until May 2018 (≈3 years of treatment), when treatment was discontinued following grade 3 treatment-unrelated elevated creatinine, and he did not resume treatment because he was no longer able to maintain the treatment schedule. In October 2018, 4 months after discontinuing treatment, the patient died of sepsis related to aspiration pneumonia from a separate infectious episode.

*Patient summary 5*

A woman aged 71 years with metastatic NSCLC with squamous cell histology received her first dose of avelumab as 1L treatment in September 2015. She had been diagnosed with metastatic disease in August 2015. At initiation of avelumab, the patient had target lesions in the lung, lymph nodes, and adrenal gland and non-target lesions in lung and bones (**Figure 1**). She achieved a partial response at first tumor assessment (after 6 weeks). After further treatment, complete response was recorded in non-target lesions. In March 2017 (after ≈17 months of avelumab), the patient developed progressive disease due to an increase in a lymph node lesion, which was treated with radiotherapy, and avelumab was continued. In 2018, treatment was interrupted following a stroke, which was considered unrelated to avelumab treatment based on a history of deep vein thrombosis. In March 2019, she developed treatment-related increased gamma-glutamyl transferase, which increased transiently to grade 3 but resolved without intervention after ≈6 months. The patient had a history of kidney stones prior to study enrolment. She remained on avelumab treatment and maintained responses in target lesions until last follow-up in June 2020 (>4.5 years of avelumab treatment).