ESMO Open Cancer Horizons

Introducing a new *ESMO Open* article series: how I treat side effects of immunotherapy

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Immunotherapy has revolutionised medical oncology due to durable responses and favourable clinical trial outcomes seen in some patient populations treated with immune checkpoint inhibitors.[1] As a consequence, various immune checkpoint inhibitors have been approved by regulatory bodies and have quickly been adpoted as the standard treatment option in several cancer types, such as melanoma, lung cancer and renal cell cancer.[2–8] Efficacy has been shown not only in metastatic stages including patients in highly advanced treatment phases but also in patients with lung cancer and melanoma treated in the adjuvant setting.[9] Recent data from lung cancer, melanoma and glioblastoma indicate that immune checkpoint inhibition may even be of relevant clinical benefit in neoadjuvant therapy, thus opening novel avenues for further development of cancer immunotherapy.[10–23] In addition, novel molecular insights drive refined selection of patients with cancer for targeted treatments including immunotherapies and the development of new approaches to effective anti-cancer immunomodulation.[24–26] Notwithstanding the economical issues and implications,[27–29] all of these developments lead to a quickly increasing number of patients with cancer being exposed to modern immunotherapy in clinical routine worldwide. As a consequence, the medical community is increasingly faced with immune-related side effects of these novel therapeutics in everyday practice. The mode of action of immune checkpoint inhibitors explains the particularly broad spectrum of side effects associated with their use.[30–32] Type and severity of adverse effects seen in patients treated with inhibitors of CTLA4, PD1, PD-L1 and other immunomodulatory molecules vary greatly between patients and require a well-informed and individualised approach to maximise patient safety. The current series of articles aimed to provide concise summaries of the personal approach of key opinion leaders to specific immune-related toxicities with a focus on rare adverse effects such as neurological and rheumathological phenomena and may complement the comprehensive and well-accepted general guidelines published by international societies, including the European Society of Medical Oncology.[33] We do hope that the articles serve our readership and contribute to the spread of expertise in the quickly moving field of cancer immunotherapy and ultimately better care of patients with cancer worldwide.

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REFERENCES

1. Granier C, De Guillebon E, Blanc C, *et al*. Mechanisms of action and rationale for the use of checkpoint inhibitors in cancer. *ESMO Open* 2017;2:e000213.
2. de Marinis F, Ciardiello F, Baas P, *et al*. 30 Immunotherapy in advanced NSCLC-from the 'tsunami' of therapeutic knowledge to a clinical practice algorithm: results from an international expert panel meeting of the Italian Association of Thoracic Oncology (AIOT). *ESMO Open* 2018;3:e000298.
3. Economopoulou P, Kotsantis I, Psyrri A. The promise of immunotherapy in head and neck squamous cell carcinoma: combinatorial immunotherapy approaches. *ESMO Open* 2016;1:e000122.

4. Ramos-Esquivel A, van der Laat A, Rojas-Vigott R, *et al*. Anti-PD-1/anti-PD-L1 immunotherapy versus docetaxel for previously treated advanced non-small cell lung cancer: a systematic review and meta-analysis of randomised clinical trials. *ESMO Open* 2017;2:e000236.
5. Popovic LS, Matovina-Brko G, Popovic M. Checkpoint inhibitors in the treatment of urological malignancies. *ESMO Open* 2017;2:e000165.
6. Okusaka T, Ikeda M. Immunotherapy for hepatocellular carcinoma: current status and future perspectives. *ESMO Open* 2018;3(Suppl 1):e000455.
7. Park JH, Ahn J-H, Kim S-B. How shall we treat early triple-negative breast cancer (TNBC): from the current standard to upcoming immuno-molecular strategies. *ESMO Open* 2018;3(Suppl 1):e000357.
8. Rodriguez-Vida A, Hutson TE, Bellmunt J, *et al*. New treatment options for metastatic renal cell carcinoma. *ESMO Open* 2017;2:e000185.
9. Cheng S, Qureshi M, Pullenayegum E, *et al*. Do patients with reduced or excellent performance status derive the same clinical benefit from novel systemic cancer therapies? A systematic review and meta-analysis. *ESMO Open* 2017;2:e000225.
10. Aguiar PN, De Mello RA, Barreto CMN, *et al*. Immune checkpoint inhibitors for advanced non-small cell lung cancer: emerging sequencing for new treatment targets. *ESMO Open* 2017;2:e000200.
11. Leduc C, Adam J, Louvet E, *et al*. TPF induction chemotherapy increases PD-L1 expression in tumour cells and immune cells in head and neck squamous cell carcinoma. *ESMO Open* 2018;3:e000257.
12. Grob J-J, Mortier L, D'Hondt L, *et al*. Safety and immunogenicity of MAGE-A3 cancer immunotherapeutic with dacarbazine in patients with MAGE-A3-positive metastatic cutaneous melanoma: an open phase I/II study with a first assessment of a predictive gene signature. *ESMO Open* 2017;2:e000203.
13. Fumet J-D, Isambert N, Hervieu A, *et al*. Phase Ib/II trial evaluating the safety, tolerability and immunological activity of durvalumab (MEDI4736) (anti-PD-L1) plus tremelimumab (anti-CTLA-4) combined with FOLFOX in patients with metastatic colorectal cancer. *ESMO Open* 2018;3:e000375.
14. Goto W, Kashiwagi S, Asano Y, *et al*. Predictive value of improvement in the immune tumour microenvironment in patients with breast cancer treated with neoadjuvant chemotherapy. *ESMO Open* 2018;3:e000305.
15. Lee DH. Practical issues of biomarker-assisted targeted therapy in precision medicine and immuno-oncology era. *ESMO Open* 2018;3(Suppl 1):e000370.
16. Nishio M, Hida T, Atagi S, *et al*. Multicentre phase II study of nivolumab in Japanese patients with advanced or recurrent non-squamous non-small cell lung cancer. *ESMO Open* 2016;1:e000108.
17. Pinto JA, Vallejos CS, Raez LE, *et al*. Gender and outcomes in non-small cell lung cancer: an old prognostic variable comes back for targeted therapy and immunotherapy? *ESMO Open* 2018;3:e000344.
18. Solinas C, Gombos A, Latifyan S, *et al*. Targeting immune checkpoints in breast cancer: an update of early results. *ESMO Open* 2017;2:e000255.
19. Glitza IC, Rohlfs M, Guha-Thakurta N, *et al*. Retrospective review of metastatic melanoma patients with leptomeningeal disease treated with intrathecal interleukin-2. *ESMO Open* 2018;3:e000283.
20. Norum J, Nieder C. Tobacco smoking and cessation and PD-L1 inhibitors in non-small cell lung cancer (NSCLC): a review of the literature. *ESMO Open* 2018;3:e000406.
21. Saraiva DP, Guadalupe Cabral M, Jacinto A, *et al*. How many diseases is triple negative breast cancer: the protagonism of the immune microenvironment. *ESMO Open* 2017;2:e000208.
22. Wolf Y, Samuels Y. Cancer research in the era of immunogenomics. *ESMO Open* 2018;3:e000475.
23. Berghoff AS, Preusser M. Does neoadjuvant anti-PD1 therapy improve glioblastoma outcome? *Nat Rev Neurol* 2019;15:314–5.
24. Baurain J-F, Robert C, Mortier L, *et al*. Association of homogeneous inflamed gene signature with a better outcome in patients with metastatic melanoma treated with MAGE-A3 immunotherapeutic. *ESMO Open* 2018;3:e000384.
25. Cho J, Chang YH, Heo YJ, *et al*. Four distinct immune microenvironment subtypes in gastric adenocarcinoma with special reference to microsatellite instability. *ESMO Open* 2018;3:e000326.
26. Coelho AL, Gomes MP, Catarino RJ, *et al*. CSF-1 and Ang-2 serum levels - prognostic and diagnostic partners in non-small cell lung cancer. *ESMO Open* 2018;3:e000349.
27. Norum J, Antonsen MA, Tollåli T, *et al*. Pembrolizumab as second-line therapy in non-small cell lung cancer in northern Norway: budget impact and expected gain-a model-based analysis. *ESMO Open* 2017;2:e000222.
28. Yoo SH, Keam B, Kim M, *et al*. Low-dose nivolumab can be effective in non-small cell lung cancer: alternative option for financial toxicity. *ESMO Open* 2018;3:e000332.
29. Cheung MC, Chan KK, Sabharwal M, *et al*. Comparing assessment frameworks for cancer drugs between Canada and Europe: What can we learn from the differences? *ESMO Open* 2016;1:e000124.
30. Doherty GJ, Duckworth AM, Davies SE, *et al*. Severe steroid-resistant anti-PD1 T-cell checkpoint inhibitor-induced hepatotoxicity driven by biliary injury. *ESMO Open* 2017;2:e000268.
31. Geukes Foppen MH, Rozeman EA, van Wilpe S, *et al*. Immune checkpoint inhibition-related colitis: symptoms, endoscopic features, histology and response to management. *ESMO Open* 2018;3:e000278.
32. Kastrisiou M, Kostadima F-L, Kefas A, *et al*. Nivolumab-induced hypothyroidism and selective pituitary insufficiency in a patient with lung adenocarcinoma: a case report and review of the literature. *ESMO Open* 2017;2:e000217.
33. Haanen JBAG, Carbonnel F, Robert C, *et al*. Management of toxicities from immunotherapy: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2018;29(Supplement_4):iv264–6.