Results: Of the 2294 unique citations, 20 studies met inclusion criteria. The included studies' sample sizes ranged from 52 to 1959 patients (median n = 190 patients). 16 studies looked at distinct cancer types, and the remaining 2 studies looked at various tumors. Tumor-specific studies included Melanoma (n=4), Non-small cell lung cancer (NSCLC) (n=4), Renal cell carcinoma (n=2), Urothelial cancer (n=2), Head and neck cancer (n=1), Gastric cancer (n=2), all solid tumors (n=1), across various tumors (n=1). ICI agents used include Atezolizumab, Pembrolizumab, Nivolumab, Ipilimumab, and Durvalumab. In a pooled analysis of lung cancer patients (n = 647), the development of irAEs (irAE + versus irAE-) was associated with a statistically significant OS; HR= (0.31; 95% CI=0.24-0.40; P< 0.00001). Similarly, in melanoma patients (n = 1768), the occurrence of irAEs (versus without) was associated with a statistically significant OS; HR = 0.35; 95% CI 0.25—0.50, p < 0.00001). Furthermore, irAEs were also correlated with a statistically significant PFS across different tumors (HR = (0.46; 95% CI 0.38—0.56, p <0.00001).

Conclusions: A positive association was noted between the development of irAEs and OS and PFS in patients treated with ICI, especially in lung cancer and melanoma. However, a large prospective data is necessary to find a true association between irAEs and survival outcomes in patients receiving ICIs, especially in other cancer types, as the clinical indication of immunotherapy continues to grow.

Legal entity responsible for the study: Omar.

Funding: Has not received any funding.

Disclosure: The author has declared no conflicts of interest.

https://doi.org/10.1016/j.annonc.2021.10.098

81P Clinical value of routine FDG-PET scans as a decision tool for early immunotherapy discontinuation in advanced melanoma

E. Ellebaek[1], M. Donia[1], I.M. Svane[1], R. Andersen[1], H.W. Hendel[2]

[1]National Center for Cancer Immune Therapy, Department of Oncology, Copenhagen University Hospital, Herlev, Denmark; [2]Department of Clinical Physiology and Nuclear Medicine, PET-Center, Copenhagen University Hospital, Herlev, Denmark

Background: Routine [18F]2-fluoro-2-deoxy-D-glucose positron emission tomography (FDG-PET) may help predict clinical outcomes after response to immunotherapy. With an EMA-recommended treatment length until disease progression or unacceptable toxicity, the optimal duration of immunotherapy is still to be defined.

Methods: In a retrospective study, we retrieved from the Danish Metastatic Melanoma Database (DAMMED), all patients were annotated as Partial or Complete Response based on the CT of serial FDG-PET-CT scans. Patients treated with an anti-PD-1-containing regimen for <18 months and ≥4 months without disease progression after halting anti-PD-1 were included. Cases were divided into an "elective" and a "toxicity" group based on the reason for treatment discontinuation.

Results: A total of 140 patients were included. At 29.3 months of median follow up, a higher proportion of patients remained alive in the "elective" group (93% vs 75%, p=0.0031) with an improved melanoma-specific (HR 0.07, 95% CI 0.02-0.32, p=0.0041) survival (MSS), but no difference in progression-free survival (PFS) (HR 0.66, 95% CI 0.29-1.47, p=0.22). Patients without FDG-avid lesions at the time of treatment discontinuation had an improved MSS (HR 0.03, 95% CI 0.01-0.17, p=0.0002) and PFS (HR 0.32, 95% CI 0.13-0.84, p=0.0204).

Conclusions: Patients with metastatic melanoma who obtain an early response and early discontinue immunotherapy have an excellent prognosis, especially in the absence of treatment-limiting toxicity and FDG-PET avid lesions when discontinuing treatment. These data support the option of early discontinuation, limiting possible over-treatment and thereby toxicity, health, and economic expenses and improving logistics.

Legal entity responsible for the study: The authors.

Funding: This work was supported by the Herlev and Gentofte Research Council (grant to MD) and The National Board of Health (grant to IMS).

Disclosure: E. Ellebaek: Financial Interests, Personal, Invited Speaker: Bristol-Myers Squibb; Financial Interests, Personal, Expert Testimony: Novartis; Financial Interests, Personal, Invited Speaker: Pierre Fabre; Other, Personal, Other, Conference and travel expenses: Merck. M. Donia: Financial Interests, Personal, Invited Speaker: Roche. I.M. Svane: Financial Interests, Personal, Invited Speaker, Attending symposia: Novartis; Financial Interests, Personal, Invited Speaker, Attending symposia: Roche; Financial Interests, Personal, Invited Speaker, Attending symposia: Merck; Financial Interests, Personal, Invited Speaker, Attending symposia: Bristol-Myers Squibb; Financial Interests, Institutional, Research Grant: Novartis; Financial Interests, Personal, Other, Attending symposia: Pfizer. All other authors have declared no conflicts of interest.

https://doi.org/10.1016/j.annonc.2021.10.099

82P Exploring treatment patterns and outcomes of patients with advanced lung cancer (aLC) using artificial intelligence (AI)-extracted data

W.Y. Cheung[1], C. Farrer[2], L. Darwish[3], C. Pettengell[3], E.L. Stewart[3]

[1]Department of Oncology, University of Calgary, Calgary, AB, Canada; [2]Tom Baker Cancer Centre, Alberta Health Services, Calgary, AB, Canada; [3]Clinical Research, Pentavere Research Group Inc, Toronto, ON, Canada

Background: With the recent uptake of novel therapeutic agents, such as immunotherapy (IO) to treat aLC, there is a need for real world data (RWD) to understand the shift in treatment patterns and inform strategies to optimize available therapies. While traditional approaches of manual chart review are labour intensive and error prone, innovative AI techniques have been shown to be a viable approach to RWD extraction. This study aims to explore the treatment patterns and outcomes of patients with aLC who had ever received IO, using data extracted from patient records using AI.

Methods: This retrospective chart review includes 2,435 patients (≥18 years) with aLC diagnosed at Alberta Health Services between January 1st 2010 and January 1st 2019. An AI engine, DARWEN™, was used to extract 21 clinical features including clinico-demographic, tumour, and treatment information. AI outputs were fully validated against a manually-curated dataset and exceeded the required data standards; all features had over 90% accuracy except for smoking status which had an overall accuracy of 82%. Traditional Cox regression models were used to assess the relationships between clinical covariates and treatment duration or overall survival.

Results: Of the total aLC cohort (n=2,435), 408 patients received IO, mostly as second line treatment (53%). Since 2017, aLC patients were increasingly receiving IO as first-line therapy, demonstrating longer treatment duration than those receiving IO at later lines (HR: -0.4, 95% CI: -0.6, -0.2; p<0.01). The use of steroids at any point during treatment was associated with shorter IO treatment duration (HR: -0.6, 95% CI: -1.0, -0.2; p<0.01) but not overall survival. Patients with a diagnosis of adenocarcinoma were twice as likely to survive than those with squamous cell carcinoma (HR: 2.1, 95% CI: 1.1, 4.1; p=0.03).

Conclusions: With the use of novel therapeutic agents in practice, real world patient experiences provide valuable insights into treatment outcomes and personalized care strategies. AI technology can be leveraged to extract accurate real-world patient-level data at scale demonstrating evolution of treatment patterns and clinical covariates which impact real-world patient outcomes.

Legal entity responsible for the study: Alberta Health Services.

Funding: Hoffmann-La Roche Limited.

Disclosure: L. Darwish, C. Pettengell, E.L. Stewart: Financial Interests, Institutional, Sponsor/Funding: Hoffmann-La Roche Limited. All other authors have declared no conflicts of interest.

https://doi.org/10.1016/j.annonc.2021.10.100

83P Association of lung immune prognostic index (LIPI) with progression-free survival (PFS) in soft-tissue sarcoma (STS) patients treated with immunotherapy (IO) in early phase trials

E. Nassif[1], A. Le Cesne[2], C. Massard[3], L. Mezquita[4], M. Roulleaux Dugage[5], R. Bahleda[3], A. Dufresne[1], M. Brahmi[6], I. Ray-Coquard[1], P. Pautier[7], A. Leary[8], A. Levy[9], C. Le Pechoux[10], C. Honoré[11], O. Mir[12], B. Besse[13], J-Y. Blay[14], E. Auclin[15]

[1]Medical Oncology, Centre Leon Berard, Lyon, France; [2]Medical Oncology Department, Gustave Roussy - Cancer Campus, Villejuif, France; [3]DITEP Department, Gustave Roussy - Cancer Campus, Villejuif, France; [4]Medical Oncology, Hospital Clinic y Provincial de Barcelona, Barcelona, Spain; [5]Oncology Department, Gustave Roussy - Cancer Campus, Villejuif, France; [6]Oncology Department, Centre Léon Bérard, Lyon, France; [7]Medicine Dept., Institut Gustave Roussy, Villejuif, France; [8]Medical Oncology, Institut Gustave Roussy, Villejuif, France; [9]Radiation Oncology, Gustave Roussy - Cancer Campus, Villejuif, France; [10]Radiation Oncology, Institut Gustave Roussy, Villejuif, France; [11]Surgical Oncology, Gustave Roussy - Cancer Campus, Villejuif, France; [12]Department of Ambulatory Care, Institut Gustave Roussy, Villejuif, France; [13]Cancer Medicine Department, Institut Gustave Roussy, Villejuif, France; [14]Medicine Department, Centre Léon Bérard, Lyon, France; [15]Oncology, Hopital European George Pompidou, Paris, France

Background: Immunotherapy in STS patients yields median progression-free survival (PFS) of 1.5 to 4.5 months, which varies according to presence of tertiary lymphoid structures and histotype. The LIPI is a recognized prognostic factor in several tumor types treated with IO. We explored the prognostic value of LIPI in STS patients treated with IO drugs in early phase trials.

Methods: This is a retrospective study including all STS patients enrolled in early phase trials at Gustave Roussy and Centre Leon Berard from 2012 to 2020. Patients were grouped according to class of drug (IO versus other). LIPI was calculated based on derived neutrophils/(leukocytes minus neutrophils) ratio > 3 (dNLR) and LDH > normal. LIPI groups were good (zero factor), intermediate (one factor) and poor (two factors).