Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE

ANNALS OF ONCOLOGY driving innovation in oncology

LETTERS TO THE EDITOR

Acceptance of SARS-CoV-2 vaccination among French patients with cancer: a cross-sectional survey

Vaccination against severe acute respiratory syndrome-related coronavirus-2 (SARS-CoV-2) represents an unprecedented hope in the fight against the global epidemic which has devastated the world. International efforts in the development and approval of several vaccines led to the start of vaccination campaigns less than 1 year after the emergence of this new pandemic. The main trials showed efficacy in >90% of individuals and a favorable safety profile in healthy but also older populations.[1] Patients with cancer have been shown to have a variable but confirmed higher risk of severe coronavirus disease 2019 (COVID-19)[2] and should be a target population for vaccination, despite that they were paradoxically excluded from the first trials.

In order to better prepare the future vaccination campaign among patients treated or monitored for cancer, we measured the acceptability towards the anti-SARS-CoV-2 vaccination in this specific population. We conducted a cross-sectional survey with an anonymous self-administered paper questionnaire delivered to every admitted ambulatory patient in four French cancer centers from 11 November 2020 to 12 December 2020. Among the 1244 delivered questionnaires, 999 analyzable forms were returned (80.3%). The population included 56.1% women and the median age was 67 (range 18-97) years. Among these patients, 47% were under active treatment (chemo- or immunotherapy and/or radiotherapy), 40% were under surveillance and 13% were under hormonal therapy. The majority had received an influenza vaccine in 2020 (54.3%) or in previous years (52.2%). A very small proportion of respondents declared they had contracted COVID-19 (2.8%).

Among the respondents, 536 (53.7%) reported their intent to be vaccinated as soon as the vaccine was available, whereas 297 (29.7%) considered they were not ready yet but likely to change their mind. Only 166 patients reported to definitely refuse vaccination (16.6%).

For patients in favor of vaccination, the main reasons they reported were fear about their health (76.9%), the desire to protect their relatives (49.9%), the duty for collective responsibility (45.6%) and finally the wish to return to a normal life (38.7%). For patients unsure about vaccination, the arguments that could convince them to be vaccinated were to obtain more information on efficacy (59.4%), on safety (50.3%), on the type of vaccine administered (35.2%) and only 7.4% for collective responsibility or return to a normal life. For patients who did not support vaccination, the main reasons were the lack of confidence in the scientific results (88%), fear of side-effects (30%) and believing COVID to be benign for few respondents (3.6%).

The predictors for vaccination acceptance in multivariate analysis were history of influenza vaccination [odds ratio (OR) 3.8; 95% confidence interval (CI) 2.9-5.1, $P < 0.001$], male sex (OR 1.8; 95% CI 1.4-2.4 $P < 0.001$) and age >69 years (OR 1.4; 95% CI 1-1.8, $P < 0.05$) (Figure 1).

The oncologist was considered qualified to advise the patients for a majority of them (59%), mainly the 'yes' (62.9%) or 'why not' (63.3%) respondents contrasting with 38.6% of the 'no' ($P < 0.001$). In contrast, personal judgment was the main source of reliable information among the 'no' respondents (45.8%) in comparison with 'yes' (12.7%) or the 'why not' respondents (16.5%) ($P < 0.001$).

Our study shows the willingness of a majority of patients in active cancer care or on surveillance to be vaccinated against COVID-19, mainly considering themselves to be at risk.

Unfortunately, no data are available yet to formally assess the efficacy of COVID-19 vaccine in cancer patients. The immune response could be reduced as it has already been shown for influenza inactivated vaccines in patients undergoing chemotherapy[3] or targeted anti-CD-20 therapy,[4] with better coverage, however, by adding a second dose.[5] The high efficacy of messenger RNA vaccines favored by the booster dose allows us to hope for a sufficient

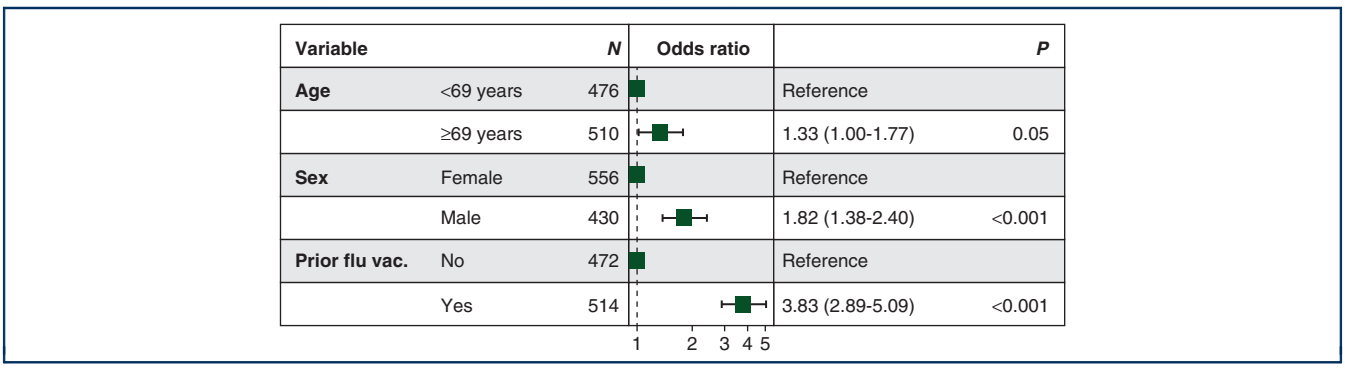

Figure 1. Predictors of SARS-CoV-2 vaccination acceptance.
Prior flu vac.: prior seasonal influenza vaccination.

protective efficacy for a majority of patients, associated *a priori* with an equal tolerance to the general population, though to be confirmed. Studies with stratification according to the type of treatment and the type of vaccine are a priority for the international oncology community.

J. Barrière[1]*, J. Gal[2], B. Hoch[3], O. Cassuto[4], A. Leysalle[1], E. Chamorey[2] & D. Borchiellini[5]

[1]*Department of Medical Oncology, Clinique Saint Jean, Cagnes-sur-Mer;*
[2]*Department of Biostatistics and Epidemiology, Centre Antoine Lacassagne, Nice;*
[3]*Department of Medical Oncology, Centre Azuréen de Cancérologie, Mougins;*
[4]*Department of Medical Oncology, Clinique Saint George, Nice;*
[5]*Department of Medical Oncology, Centre Antoine Lacassagne, Nice, France*
(*E-mail: j.barriere@polesantesaintjean.fr).

Available online 30 January 2021

https://doi.org/10.1016/j.annonc.2021.01.066

FUNDING

None declared.

DISCLOSURE

The authors have declared no conflicts of interest.

REFERENCES

1. Anderson EJ, Rouphael NG, Widge AT, et al. Safety and immunogenicity of SARS-CoV-2 mRNA-1273 vaccine in older adults. *N Engl J Med*. 2020;383(25):2427-2438.
2. Lee LYW, Cazier JB, Starkey T, et al. COVID-19 prevalence and mortality in patients with cancer and the effect of primary tumour subtype and patient demographics: a prospective cohort study. *Lancet Oncol*. 2020;21(10):1309-1316.
3. Meerveld-Eggink A, de Weerdt O, van der Velden AMT, et al. Response to influenza virus vaccination during chemotherapy in patients with breast cancer. *Ann Oncol*. 2011;22(9):2031-2035.
4. Yri OE, Torfoss D, Hungnes O, et al. Rituximab blocks protective serologic response to influenza A (H1N1) 2009 vaccination in lymphoma patients during or within 6 months after treatment. *Blood*. 2011;118(26):6769-6771.
5. Rousseau B, Loulergue P, Mir O, et al. Immunogenicity and safety of the influenza A H1N1v 2009 vaccine in cancer patients treated with cytotoxic chemotherapy and/or targeted therapy: the VACANCE study. *Ann Oncol*. 2012;23(2):450-457.

Checkpoint inhibitor therapy for skin cancer may be safe in patients with asymptomatic COVID-19

An ongoing area of uncertainty during the SARS-CoV-2 pandemic is the safety of immune checkpoint inhibitor (ICI) therapy for cancer and the theoretical possibility of exacerbated immune-related adverse events (irAEs) secondary to COVID-19 inflammatory pathology.[1] Current guidelines from the European Society of Medical Oncology (ESMO) recommend interruption of ICI treatment of patients with COVID-19 and advanced/metastatic cancer until recovery from infection, and postponement of treatment in the neoadjuvant/adjuvant setting.[2]

Between 1 September 2020 and 15 December 2020, our institution treated 343 patients with skin cancers, including 295 with melanoma, 39 with Merkel cell carcinoma (MCC), and 11 with cutaneous squamous cell carcinoma (cSCC) with ICIs (nivolumab, pembrolizumab, avelumab, or cemiplimab). At our centre, a program of public health surveillance was initiated in March 2020, during which all patients receiving immunotherapy were tested for SARS-CoV-2 infection before treatment. Per safety protocols, all patients were subjected to RT-PCR nasopharyngeal swab tests before initiation of therapy. Subsequently, all patients were monitored by serology for anti-SARS-CoV-2 immunoglobulin G (IgG) and immunoglobulin M (IgM) before receiving ICIs. Any patients with serologic positivity received nasopharyngeal swab tests to confirm potential infection. Anti-SARS-CoV-2 antibodies were detected in 50 of the 343 treated patients (14.6%). Of those 50, *de novo* infections confirmed by RT-PCR during or after treatment were detected in 17 (5%).

Here, we report that administration of ICIs was safe in these patients, with no increased incidence of irAEs or worsening of COVID-19 disease in patients with skin cancers incidentally discovered to be infected with SARS-CoV-2 through a median follow-up of 2.23 months (range 1-10 months). Although the prospect of delayed-onset irAEs remains a possibility, no new signals were reported during follow-up, and all of the patients recovered and are doing well. Importantly, among six patients who received ICIs 1 day before confirmed COVID-19 diagnosis by nasopharyngeal swab, no adverse events were observed, all infections were completely asymptomatic, and cancer therapy was reinitiated upon viral clearance. An additional 11 patients were found to be infected with SARS-CoV-2 within 10-30 days after their most recent cycle of immunotherapy, meaning that the effects of ICI were likely still present given known pharmacokinetics and pharmacodynamics of checkpoint blockade. Of these 11 patients, 6 developed mild COVID-19 symptoms, including fever, cough, and anosmia. Only one patient required hospitalization due to mild pneumonia, with findings of increased serum C-reactive protein