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Letter to the editor

Influenza and SARS-CoV-2 vaccinations adherence after liver transplantation during the second year of the COVID-19 pandemic (results of a patients' survey)

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Influenza and more recently SARS-CoV-2 vaccinations are recommended in organ transplant recipients [1, 2] and is covered by health system in France. A usual major limitation of vaccinations in this population is the poor patients' adherence and lack of interest. We reported that influenza vaccination rate was high (65%), and increased when compared to the year before, in a population of liver transplant (LT) recipients, in 2020, the first year of the Covid-19 pandemic [3]. At that time (winter 20–21 in France), SARS-CoV-2 vaccine started to be available. The proportion of patients willing to be vaccinated (or already vaccinated) against Covid-19 was higher in patients vaccinated against influenza, compared to non-vaccinated (95% vs. 72%, $p < 0.05$). The objective of the present study was to evaluate the adherence of the same large cohort of LT recipients to both influenza and SARS-CoV-2 vaccinations, during the second winter of Covid-19 pandemic, based on a questionnaire survey sent by Short Message Service.

A cohort of adult LT patients, transplanted between 2000 and 2020, followed in 3 transplant centers (Lille, Lyon HEH and Villejuif) was enrolled. Patients had to have had a contact with their transplant center during the year 2021, and a recorded phone number for sending a questionnaire by text message (Calmedica's Memoquest Platform). Demographic and clinical data were available from patients' medical records. The questions concerned Covid-19 disease and vaccinations (and possible reasons for non-vaccination), for the winter 2021/2022 campaign. Patient consent was systematically obtained. The questionnaire was sent in December 2021 to a total of 1352 patients (Lille 34%, Lyon HEH 28% and Villejuif 38%). The positive response rate (agreement and response to the questionnaire) was 38.9%. The majority of the participating patients were male (70%), median age 61.0 years (mean 57.7 years), and the median length of transplantation was 6.9 years. The main indication for LT was alcohol-related liver disease (34.4%). The proportion of patients who presented a Covid-19 infection was 13%. The suspected mode of contamination was familial (39%) or hospital (14%). The hospitalization

rate was 29% (intensive care 9%). The proportion of patients willing to be vaccinated (or already vaccinated) against influenza for the 2021/2022 campaign was 78%. The proportion of the patients who were vaccinated against SARS-CoV-2 was 97%. The main reasons for non-vaccination were: 43% fear side-effects, 22% think the vaccine is ineffective and fear side-effects, and 14% never get vaccinated. Gender, age, age of transplantation and initial indication for transplantation (alcohol vs. other) were not significantly associated with SARS-CoV-2 vaccination or not. The proportion of patients willing to do regular Covid-19 vaccine booster shots if recommended was 74%. The proportion of patients willing to be vaccinated (or already vaccinated) against influenza was significantly higher in patients vaccinated against Covid-19, compared to non-vaccinated (80% vs. 33%, $p < 0.05$ Chi-2 test).

In conclusion, the results of this French cohort with a very good participation rate show a very good influenza vaccination rate (78%), with a quite probable "stimulating" effect of the Covid-19 pandemic, for the second consecutive year (65% in 2020/2021 vs. 57% in 2019/2020). Not surprisingly, adherence of LT recipients to SARS-CoV-2 vaccination was massive. It was also the case for vaccine booster shots. Tharmaraj and coll. in Australia performed in a population of kidney transplant recipients an early survey (March/April 2021) assessing willingness to be vaccinated, attitudes toward Covid-19 vaccines, and barriers and enablers to proceeding with vaccination [4]. They found that "only" 73.1% of the patients planned to receive vaccination, 22.2% were undecided, and 4.7% refused vaccination. Patients in undecided group were significantly younger and were less positive toward (34.29% vs. 91.3%) and more concerned about vaccination (93.3% vs. 25.1%). Their concerns related to vaccine safety (including harm to their transplant), poor efficacy, and a lack of rigorous testing in transplant recipients, recalling part of our results. Undecided recipients had received less vaccine-specific information from medical specialists, but most undecided participants (95.1%) were willing to proceed with vaccination with appropriate supports,

including specific recommendations and vaccine information provided by their transplant specialist/team. This strongly confirms that efforts can be made to educate transplant recipients who refuse vaccination. Is it so different than in the general population?

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