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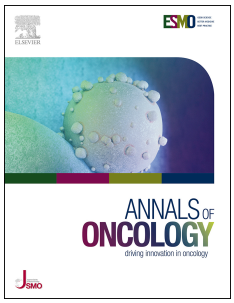

Reduced SARS-COV-2 infection and death after two doses of COViD-19 vaccines in a series of 1503 cancer patients

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Reduced SARS-COV-2 infection and death after two doses of COViD-19 vaccines in a series of 1503 cancer patients

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Letter (N=500 words)

Barriere et al reported on less efficient immune response after COVID-19 vaccination in cancer patients vs patients without cancers (1). Cancer patients are at high risk of death from COVID-19 (2), but also develop less efficient antiviral immune response after COVID-19 or vaccination (1,3,4). We report here an analysis of the clinical efficacy of SARS-COV-2 vaccination in cancer patients receiving active cancer treatment in the exhaustive series of 1503 cancer patients receiving one or two doses of COVID-19 vaccine in the Centre Leon Berard.

From January 4th to April 6th, 2021, 1503 cancer patients without previous documented COVID-19 infection (female N= 735 [48.9%]), median age: 64.8 years, range 16.7-95.4), under active cancer treatment received at least one dose of SARS-COV-2 vaccine. Less than 10% of patients refused the vaccination. Respectively, 1127 (74.9%), 317 (21.1%), 59 (4%) received BNT162b2, mRNA-1273, Chadox1 vaccines as first doses, depending on availability. 1203 (80%) patients had a solid tumor and 300 (20%) had haematological malignancy, including 72 patients with chronic lymphocytic leukaemia. 1081 (71.9%) has metastatic disease. Respectively, 1003 (66.7%), 60 (3.9%), 245(16.3%) and 189(12.5%) had received cytotoxic chemotherapy, anti-CD20, radiotherapy, or surgery in the last 3 months

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1091 (72.6 %) patients received two injections of COVID-19 vaccine at a median interval of 26 days (range 13-80), and 412 (27.4 %) received only one injection (median follow-up after the day of vaccination for this group was 43 days, range 1-130).

With a median follow-up of 44 (range 1-130) days for the whole group of 1503 patients, 24 of the 1503 (1.5%) patients developed COVID-19 symptoms with documented SARS-COV-2 on RT-PCR: 4/1091 (0.4%) in patients who received two doses of vaccine vs 20/412 (5%) for those who received a single dose ($p<0.0001$). With a landmark analysis at 21 days after first dose, these numbers were 4/1001 (0.4%) vs 5/283 (1.7%) for patients who received two vs one dose of vaccine ($p=0.016$). Figure 1A and 1B show the cumulative risk of documented COVID-19 with positive RT-PCR for SARS-COV-2. The same differences were observed when mRNA vaccines were selected (not shown). Diagnosis of RT-PCR documented SARS-COV-2 was not correlated with age, co-morbidities (e.g. diabetes, renal failure, obesity), solid or hematological malignancies (not shown).

Three of the 24 (12.5%) RT-PCR+ patients died of COVID-19; 2 of 5 (40%) vs 1 of 19 (5%) patients with hematological and solid tumors, respectively ($p=0.036$), for an overall mortality rate of 0.7% and 0.08% in these two groups. The overall survival within 2 months from the date of the first vaccination was inferior for patients vaccinated with one dose vs patients vaccinated twice (Figure 1C, log rank $p=0.015$) in the overall population, as well as with a landmark analysis at 21 days (Figure 1D, p=0,032).

96 of the 1503 (6%) were tested for antispike Ab after vaccination at a median time of 55 days after the first vaccine; 61/96 (63%) had detectable antispike Ab. Among these, 4 of the 8 (50%) patients who presented later a documented SARS-COV-2 RT-PCR had a detectable antispike Ab. Among the 96 tested patients, 4 of the 5 (80%) patients who died had undetectable antispike Ab after vaccination (vs 31/91 [34%] of the remaining patients, p=0,038). Two of the 5 who died had a RT-PCR documented SARS-COV-2 infection.

In this experience, COVID-19 vaccination was found to be efficient in cancer patients. Documented COVID-19 was, however, more frequent in patients who received only one dose of vaccine. Overall

death rate in the 2 months following the first vaccination was significantly higher in patients receiving only one dose and in patients with hematological cancers.

Consistently with Barriere et al and another recent report (5), two doses of COVID-19 vaccines at 21 to 28 day intervals according to the methods of the published randomized clinical trials must be recommended in cancer patients receiving active treatment.

Disclosure: The authors have declared no conflicts of interest

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Figure legend:

Figure1: Documented SARS-COV-2 infection and death after one dose vs two doses of COViD-19 vaccines in cancer patients

A: Risk of SARS-COV-2 RT-PCR+ from the first vaccine injection (1 dose in blue vs 2 doses in green)

B: Risk of SARS-COV-2 RT-PCR+ from day-21 after the first vaccine injection (1 dose in blue vs 2 doses in green)

C: Survival from the first vaccine dose (1 dose in blue vs 2 doses in green)

D: Survival from day 21 after the first vaccine dose (1 dose in blue vs 2 doses in green)

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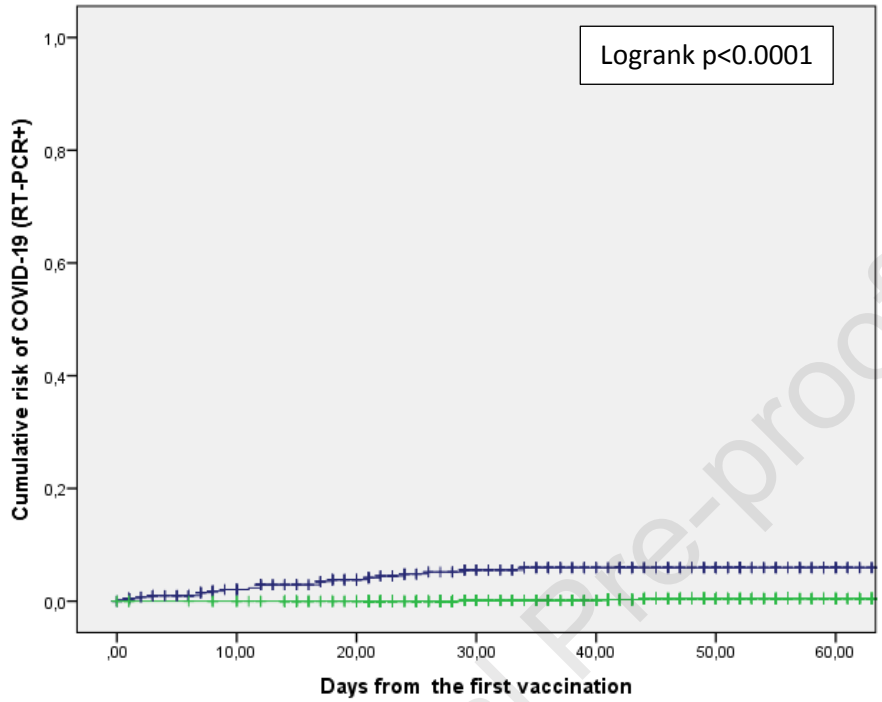
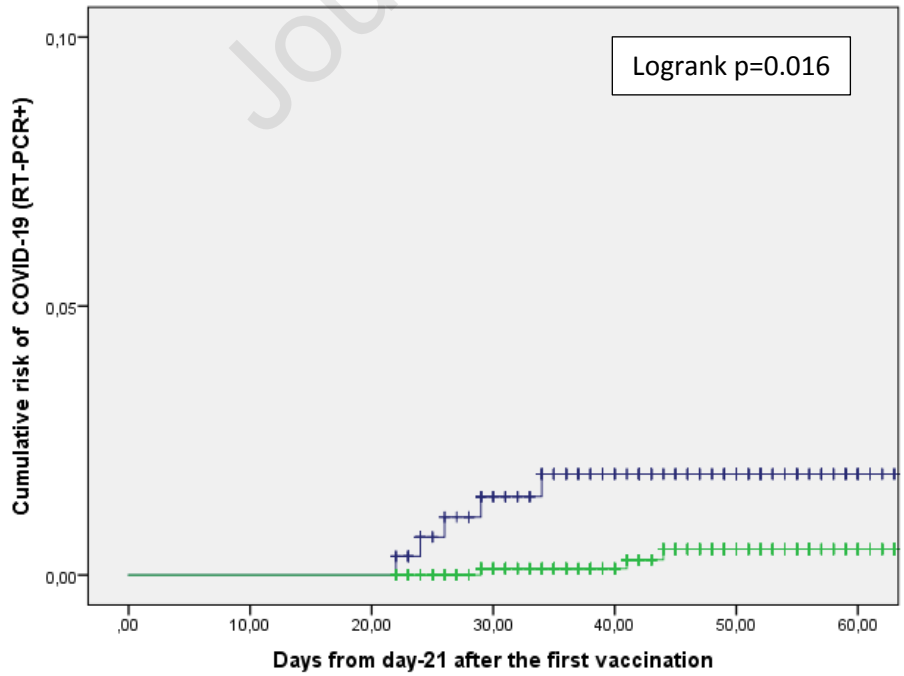
Figure 1: Documented SARS-COV-2 infection and death after one dose vs two doses of COViD-19 vaccines in cancer patients

A: Risk of SARS-COV-2 RT-PCR+ from the first vaccine injection (1 dose-blue vs 2 doses- green)



B: Risk of SARS-COV-2 RT-PCR+ from day-21 after first vaccine (1 dose-blue vs 2 doses- green)



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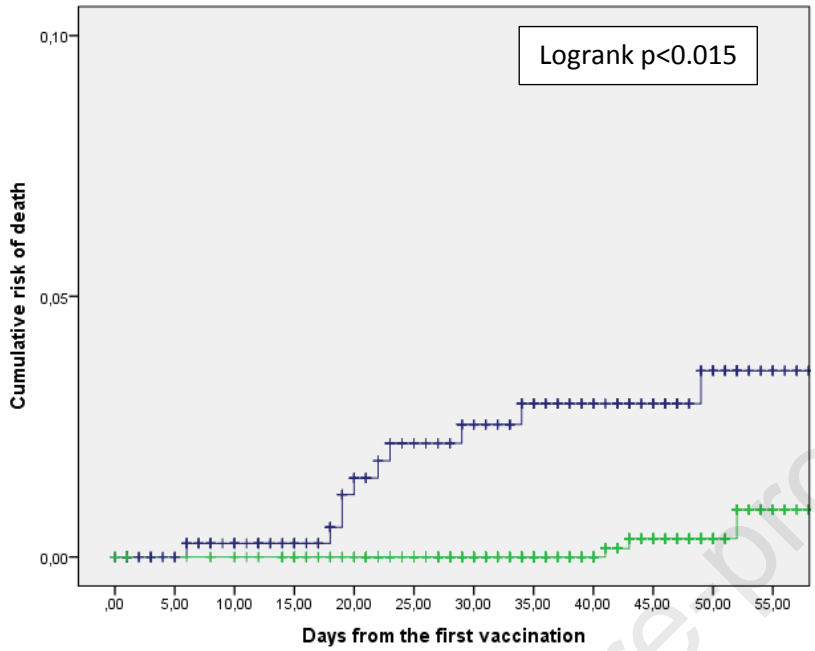
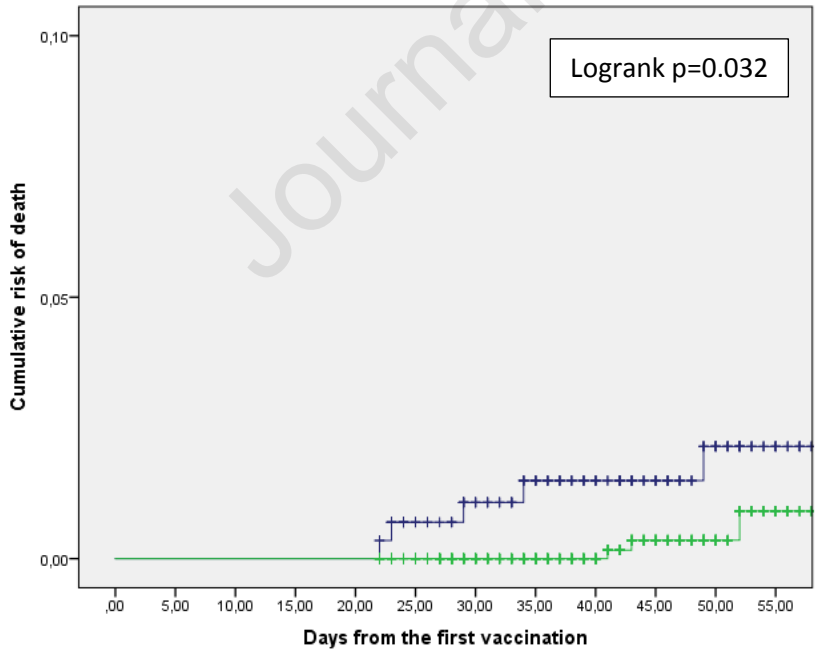
C: Survival from the first vaccination (1 dose-blue vs 2 doses- green)



D: Survival from day 21 after the first vaccination (1 dose-blue vs 2 doses- green)



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