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Letter to the Editors-in-Chief

Is pulmonary embolism occurring after SARS COV-2 vaccination provoked or unprovoked?



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1. Introduction

Some cardiovascular side effects were recently reported in the context of SARS-CoV-2 RNA vaccination, among them pulmonary embolism (PE) [1]. Since duration of PE treatment is directly related to triggering event, we have to discuss if PE occurring after COVID RNA vaccination should be considered as a provoked or unprovoked event.

2. Data

The French Jabagi cohort reported cardiovascular events observed in more than 11,000 vaccinated and unvaccinated people over 75 years of age hospitalized during the period December 2020–April 2021 for cardiovascular events, among them 7221 for PE, of whom 55.3% received at least one dose of the vaccine [1]. The relative incidence (RI) for PE was not higher during the 14-day period following the 1st 0.85 (95% CI 0.75–0.96) or second dose, 1.10 (95% CI 0.95–1.26).

The cohort published by Barda reported adverse events (AEs) observed in Israel after BNT162b2 mRNA vaccination (Pfizer-Bioentech) from December 2020–May 2021, involving more than 2 million vaccinated individuals. Among them, more than 880,000 with no previous diagnosis of PE were matched to an unvaccinated control group [2]. Events occurring within 42 days after vaccination were analyzed, and risk ratios and risk differences per 100,000 persons at 42 days after vaccination were calculated. Ten and 17 PE were reported in the vaccinated and control groups respectively, i.e. non-significant risk ratio (0.56, 95% CI 0.21–1.15) nor risk difference (–1.5, 95% CI –3.6–0.4). By contrast, over the same period, the SARS-CoV-2 infection was responsible for a dramatic increase of PE, risk ratio 12.4 (95% CI 6.89–29.2) and risk difference 61.7 per 100,000 (95% CI 48.5–75.4).

The cohort published by Klein reported AEs after BNT162b2 mRNA or mRNA-1273 (Moderna) vaccination observed in the US from December 2020–June 2021. Events occurring in the period 1–21 days after vaccination (1 or 2 doses) were compared to the later period 22–42 d post-vaccination in over 6 million individuals, and adjusted rate ratios RR were calculated [3]. Again, there was no difference in the occurrence of PE, adjusted RR 1.01 (95% CI 0.86–1.199), corresponding to an excess cases per million doses of 0.4 (95% CI –7.2–6.9).

3. Summary

In conclusions, it appears that the occurrence of pulmonary embolism is not directly related to the COVID RNA vaccination, and, in the absence of a significant inflammatory reaction, such events should preferably considered as unprovoked.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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