High thrombotic risk in cancer patients receiving immunotherapy

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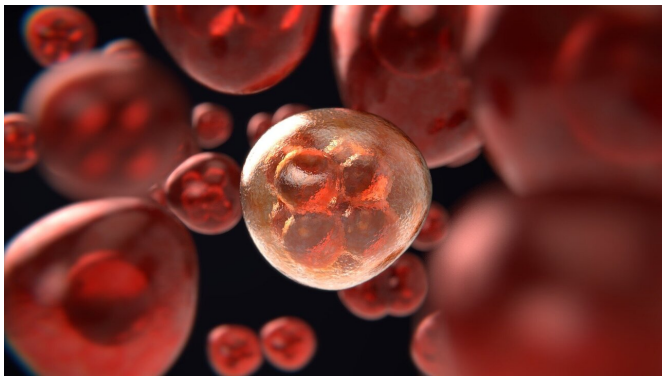

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In a study recently published in the leading journal *Blood*, Florian Moik and Cihan Ay from the Division of Hematology and Hemastasology of the Department of Medicine I of MedUni Vienna/Vienna General Hospital, working in collaboration with the Division of Oncology, the Department of Dermatology and the dispensary of Vienna General Hospital, provided preliminary data on the incidence, risk factors and clinical outcomes of thrombotic complications in this new form of cancer treatment. The main finding is that, during the course of treatment, approximately 13% of patients develop a venous thromboembolism, that is, a deep vein thrombosis or pulmonary embolism, and approximately 2% develop a thrombosis in the arterial system, including heart attack, stroke, or an acute peripheral arterial occlusion.

Cancer patients generally have a higher thrombotic risk than the population at large. This risk is influenced on the one hand by patient-specific factors and the cancer itself and, on the other, by the cancer treatment, that is to say surgery, radiotherapy, or specific chemotherapeutics, which can increase the risk.

In the last few years, immune checkpoint inhibitors have increasingly been used to treat many different types of cancer. By activating the immune system against the tumor, these drugs improve the prognosis for patients with malignant melanoma, lung cancer, renal cell carcinoma and other types of cancer.

"Patients who are treated with immune checkpoint inhibitors have often had previous cancer treatment and, in most cases, have advanced cancers. We might therefore expect a significant risk of thromboembolism but, so far, the large-scale treatment studies conducted for immune checkpoint inhibitors have not reported on it," says Principal Investigator Cihan Ay, who, like Florian Moik, is also associated with the Comprehensive Cancer Center (CCC) of MedUni Vienna and Vienna General Hospital.

In order to close these gaps in knowledge, the researchers conducted a cohort study to gather data on venous and arterial thromboembolism in patients treated with immune checkpoint inhibitors at MedUni Vienna/Vienna General Hospital between 2015 and 2018. A total of 672 patients, who had received such treatment for an average of 8.5 months, were included. The result: "The cumulative incidence of venous thromboembolism was 12.9% and of arterial thromboses 1.8%. This risk appears to be independent of the underlying type of cancer and the immune checkpoint inhibitor used, since similar rates of thrombosis were observed in these subgroups," explains Florian Moik. The occurrence of venous thromboembolism was associated with a poorer prognosis and a shorter time before tumor progression. Moreover, they frequently resulted in delays to or even discontinuation of treatment and were associated with a significant risk of recurrent thromboses and hemorrhages during anticoagulation treatment.

"The results underscore the negative impact of venous and arterial thromboembolism on the

clinical course of cancer patients," says study author Moik in summary. "This study fails to determine whether the high risk of thromboembolism that has been observed has a causal link with immune-checkpoint-inhibitor therapy or merely reflects the underlying basic risk in this patient group."

Irrespective of this, he believes it is important to build awareness of these complications, particularly in the light of the high efficacy of this new cancer treatment. "This paper therefore serves as a basis for future studies with a view to identifying patients who could benefit from thrombosis prophylaxis, especially to prevent venous thromboembolism."

More information: Florian Moik et al. Incidence, risk factors, and outcomes of venous and arterial thromboembolism in immune checkpoint inhibitor therapy, *Blood* (2020). DOI: 10.1182/blood.2020007878

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