IMMUNOTHERAPY AND TARGET THERAPY RELATED VTE

TARGETED THERAPIES FOR CANCER AND THE RISK OF ARTERIAL AND VENOUS THROMBOEMBOLISM

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Aim. The therapeutic landscape of novel antineoplastic therapies is ever changing. With the advent of antibody-drug conjugates (ADC), there is increased life expectancy and hope for cure, but for adverse events including arterial thromboembolism (ATE) and venous thromboembolism (VTE). Other anti-cancer agents also cause cardiotoxic effects that led to the burgeoning field of Onco-cardiology.

Materials & Methods. The association of ATE and VTE due to ADCs is based on the literature searches performed in PubMed.

Results. As of January 2026, the FDA has approved around 15-20 ADCs as targeted therapies for cancer. Inotuzumab ozogamacin (Besponse) showed a strongest signal for an increased risk of VTE. While several ADCs, including Enfortumab Vedontin (Padcev), Brentoximab Vedontin (Adcetris), Polatuzumab Vedontin (Polivy), Tizotumab Vedontin (Tivdak) and less association with a risk for ATE. It is crucial to understand the mechanism of development of VTE or ATE due to ADCs. It is reported that tissue factor (TF) is expressed in tumor cells and tumor vasculature in many solid tumors including cervical, bladder and prostate cancer. TF is known to complex with Factor VIIa and induces clot formation. TF can trigger intracellular signaling and through protease activator receptor two, can produce proangiogenic factors, cytokines and adhesion molecules causing tumor growth, angiogenesis and metastases. Given that interference with TF in tumors causes inhibition of tumor growth and overexpression of TF causes poor prognosis, have promoted the development of first TF-targeting ADC such as XB002 in advanced solid tumors but was later discontinued. The existing TF-targeting ADC is tisotumab vedontin approved as a second line treatment for recurrent or metastatic cervical cancer, is associated with increased risk of bleeding requiring immediate attention or discontinuation of the drug. Besides ADCs other anticancer agents such as anti-angiogenesis inhibitors like bevacizumab are associated with increased risk of ATE abemaciclib, while CDK4/6 inhibitors such as abemaciclib carry a risk of VTE. Balantamab mefadotin may also cause ocular manifestations including keratitis and corneal microcysts.

Conclusions. This presentation will discuss various ADCs and the associated risk of arterial and VTE.