Vaccine Reactions
VITT

Thrombo-Guide
vom Labor zur Diagnose

Description:

Following any type of vaccination, systemic reactions including fever, headache, myalgia, fatigue, local pain, etc., may occur, which typically resolve spontaneously after a short duration. Rarely, immune responses occur post-vaccination that can result in thrombocytopenia. In most cases, this presents as classic immune thrombocytopenia (ITP), which must be treated accordingly.
The occurrence of thrombosis (including at atypical anatomical sites) or nonspecific bleeding events is also periodically reported.
Extremely rarely, more complex disorders manifest. In 2021, following the administration of adenovirus vector-based vaccines against SARS-CoV-2, vaccine-induced thrombotic thrombocytopenia (VITT) emerged—a life-threatening complication.

Vaccine-Induced Thrombotic Thrombocytopenia (VITT)

VITT is caused by structural molecular mimicry between adenovirus proteins and platelet factor 4 (PF4). This triggers immunization and the formation of antibodies against platelet factor 4, potentially leading to platelet activation and disseminated activation of coagulation. Approximately 1–2 weeks post-vaccination, patients present with headache, fever, bleeding diathesis, and atypical thrombosis, constituting a medical emergency that requires immediate therapeutic intervention.

Laboratory findings demonstrate thrombocytopenia, decreased fibrinogen, and markedly elevated D-dimer levels. High-titer antibodies against heparin-PF4 complexes can be detected; however, this is achieved exclusively via ELISA or functional assays, as semi-quantitative rapid tests fail to detect these antibodies.

Therapy consists of high-dose intravenous immunoglobulin (IVIG) infusions, non-heparin anticoagulation (e.g., with fondaparinux, danaparoid, or DOACs)—even in the presence of low platelet counts—and fibrinogen replacement. Platelet concentrates and heparin-containing medications are strictly contraindicated.

References:

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