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IMMUNE-MEDIATED HAEMATOLOGICAL COMPLICATIONS AFTER VACCINATION

Haematological complications caused by autoimmune mechanisms which are associated with haemorrhages, thrombosis, or both, have been described after vaccinations against various infectious, viral or bacterial diseases. The most frequent examples occur after vaccines administered to young children (e.g. against measles/mumps/chickenpox/rubella), after vaccination against diphtheria/tetanus/whooping cough, but also in adults after polio, hepatitis B, influenza and pneumococcus vaccines. Although rare in absolute terms, the most frequent complications are autoimmune thrombocytopenia accompanied by haemorrhagic manifestations. Even rarer complications include acquired haemophilia A, thrombotic thrombocytopenic purpura and cytopenia. These complications are thought to be attributable to the dysregulation of the innate and/or adaptive immune system, as a result of signals of damage associated with inflammation induced by the vaccines and antigenic molecular mimesis mechanisms following the activation of autoreactive B and T cells that were dormant prior to vaccination.
Notwithstanding the rarity of these complications, they are well-known to paediatricians in particular, but a completely different phenomenon is the recent and entirely new syndrome resulting from a neoformation of autoantibodies directed towards a cationic protein like platelet factor 4, which is accompanied more often by catastrophic occurrences of thrombosis than by occurrences of haemorrhages linked to thrombocytopenia. This syndrome, which is known as VITT (vaccine-induced immune thrombotic thrombocytopenia) is caused almost exclusively by COVID-19 vaccines developed with DNA-recombinant techniques which use human or animal viruses as vectors of the information required to produce antibodies against the coronavirus SARS-Cov-2 spike protein. Fortunately, VITT is a very rare syndrome that has been reduced considerably and will hopefully be eliminated by the decision by the regulatory authorities in many countries to avoid using adenoviral vector vaccines in young people who are more at risk of developing this rare complication. VITT gives rise to serious thrombotic phenomena (which mainly affect the visceral veins of the brain and abdomen), as well as brain haemorrhages from thrombocytopenia. Apart from the above-mentioned effective primary preventive measure, a great deal of clinical experience has also been acquired regarding the treatment of VITT, but this remains a very serious complication.