Factor XIII activity

Clotting-Guide
vom Labor zur Diagnose

Synonyms:
Fibrin stabilizing factor, Laki-Lorand factor

Description, significance:
Factor XIII is activated by thrombin and can then cause cross-linking (bridging) of long-chain fibrin polymers. This causes a solid, three-dimensional fibrin clot to form. Insufficient cross-linking makes the fibrin unstable and bleeding occurs.
Only severe congenital factor XIII deficiency (<1%) manifests itself immediately postpartum through umbilical cord bleeding. Later in life, cerebral hemorrhages or postoperative bleeding or wound healing problems may occur.

Reference range:
70-140%

Increased values:
have no clinical relevance

Decreased values:
Consumption coagulopathy (DIC), asparaginase therapy, sepsis, systemic hyperfibrinolysis, massive blood loss, dilutional coagulopathies, burns, polytrauma, major operations
Usually factor XIII levels above 5% are sufficient to prevent spontaneous bleeding. Post-operatively, in the case of severe injuries, polytrauma, etc., higher levels (>30%) are required for sufficient hemostasis.

Treatment options:
Factor XIII deficiency can be substituted by infusing an FXIII concentrates (Fibrogammin®). Since factor XIII has a very long half-life, a single dose of approx. 20 U/kg is usually sufficient.

Preanalytics:
Factor XIII is automatically determined from citrated plasma. Care must be taken to collect blood accurately, avoid contamination, fill the blood tube correctly and mix well with the citrate. The blood sample must be sent to the laboratory as quickly as possible.

References:
Thomas L, Laboratory and Diagnosis, 2023, Release 5: https://www.labor-und-diagnose.de/index.html
Parameter catalog of the Clinical Institute for Laboratory Medicine, Med.Univ.Wien and AKH Vienna: https://www.akhwien.at/default.aspx?pid=3982
List of services for clinical chemistry, Univ.Klinikum Ulm: https://www.uniklinik-ulm.de/zentrale-einrichtung-klinische-chemie/leistungskatalog.html