

Vitamin K deficiency



Description:

Vitamin K deficiency can occur during treatment with vitamin K antagonists (Marcoumar®, Sintrom®, Phenprocoumon®, Warfarin®), here it is deliberately induced to produce an anticoagulant effect. Other reasons for a vitamin K deficiency are malnutrition, gastrointestinal absorption disorders, intestinal parasites, antibiotics.

Vitamin K is necessary for the physiological hepatic synthesis of vitamin K-dependent coagulation factors and inhibitors (factors VII, IX, X, II, protein C, protein S). Without vitamin K, the gamma-carboxylation of these proteins is disturbed. The gamma-carboxyl groups are necessary for the binding to phospholipids via calcium ions. If they are missing, the hemostatic function is significantly disturbed. Vitamin K deficiency can be detected with PT, because PT is mainly dependent on factor VII activity (due to the short half-life of factor VII - 6h). If the vitamin K deficiency is more pronounced, the APTT will also be prolonged.

Treatment options:

Vitamin K deficiency can be treated by substitution of vitamin K, depending on the indication, with a single dose of 2-10 mg orally or iv. The effect begins after a few days because the liver has to synthesize the gamma-carboxylated clotting factors again.

Immediate treatment (e.g. in acute bleeding) can be done with prothrombin complex concentrates (PCC; various manufacturers). A single dose of 20-50 U/kg is usually sufficient. One unit of PCC per kg of body weight increases the PT by 1%.

The information in the product information must be observed!

Surveillance:

Measurement of the PT, in acute bleeding this should be over 50%.
For questions please contact a coagulation specialist.

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>