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P139

A mathematical model for estimating the real risk of thrombosis

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The patient suffering from thrombosis and his physician and health insurance want to avoid risky and costly over- and undertreatment. A practical and objective definition of the central diagnostic term thrombophilia is possible only by defining the real risk of suffering from a thrombosis. The real risk is a combination of all relative risk factors and their interactions. An adequate study comprising a 30 dimensional space (that is approximately the number of variables influencing the thrombotic risk according to the present scientific data) would require 1 billion different groups and therefore will not be performed. The only approved way to reaching a good guess is the application of a mathematical procedure which includes all scientifically proven 30 risk and protection factors, absolute courses of risk and their interactions, as far as known, in an appropriate scaling, or, if not known, interpolates with the help of plausible assumptions. We have developed an appropriate model for risk calculation and continuously update these formulas according to the state of the published studies. During the mathematical modelling we have tried to stick as closely as possible to the assumed mechanisms, in order to obtain most reliable extrapolation, by using e.g. linear, polynomial and exponential dependencies. The predictions of our algorithm already now coincide well with the results of relevant studies. Thus, our therapeutic decisions in situations which are not precisely defined by studies and guidelines are no longer based on mere intuition but make use of a transparent method with potency to supercede quality of evidence level IVa. The therapeutic decision, evidently remains with the responsible physician best in consensus with the informed patient. - We will discuss some interesting cases and the selection and formulations of individual risk factors and their interactions.