

Chapter 9

An Artificial Intelligence Approach to Thrombophilia Risk

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ABSTRACT

Thrombophilia stands for a genetic or an acquired tendency to hypercoagulable states, frequently as venous thrombosis. Venous thromboembolism, represented mainly by deep venous thrombosis and pulmonary embolism, is often a chronic illness, associated with high morbidity and mortality. Therefore, it is crucial to identify the cause of the disease, the most appropriate treatment, the length of treatment or prevent a thrombotic recurrence. This work will focus on the development of a diagnosis decision support system in terms of a formal agenda built on a Logic Programming approach to knowledge representation and reasoning, complemented with a computational framework based on Artificial Neural Networks. The proposed model has been quite accurate in the assessment of thrombophilia predisposition (accuracy close to 95%). Furthermore, the model classified properly the patients that really presented the pathology, as well as classifying the disease absence (sensitivity and specificity higher than 95%).

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