

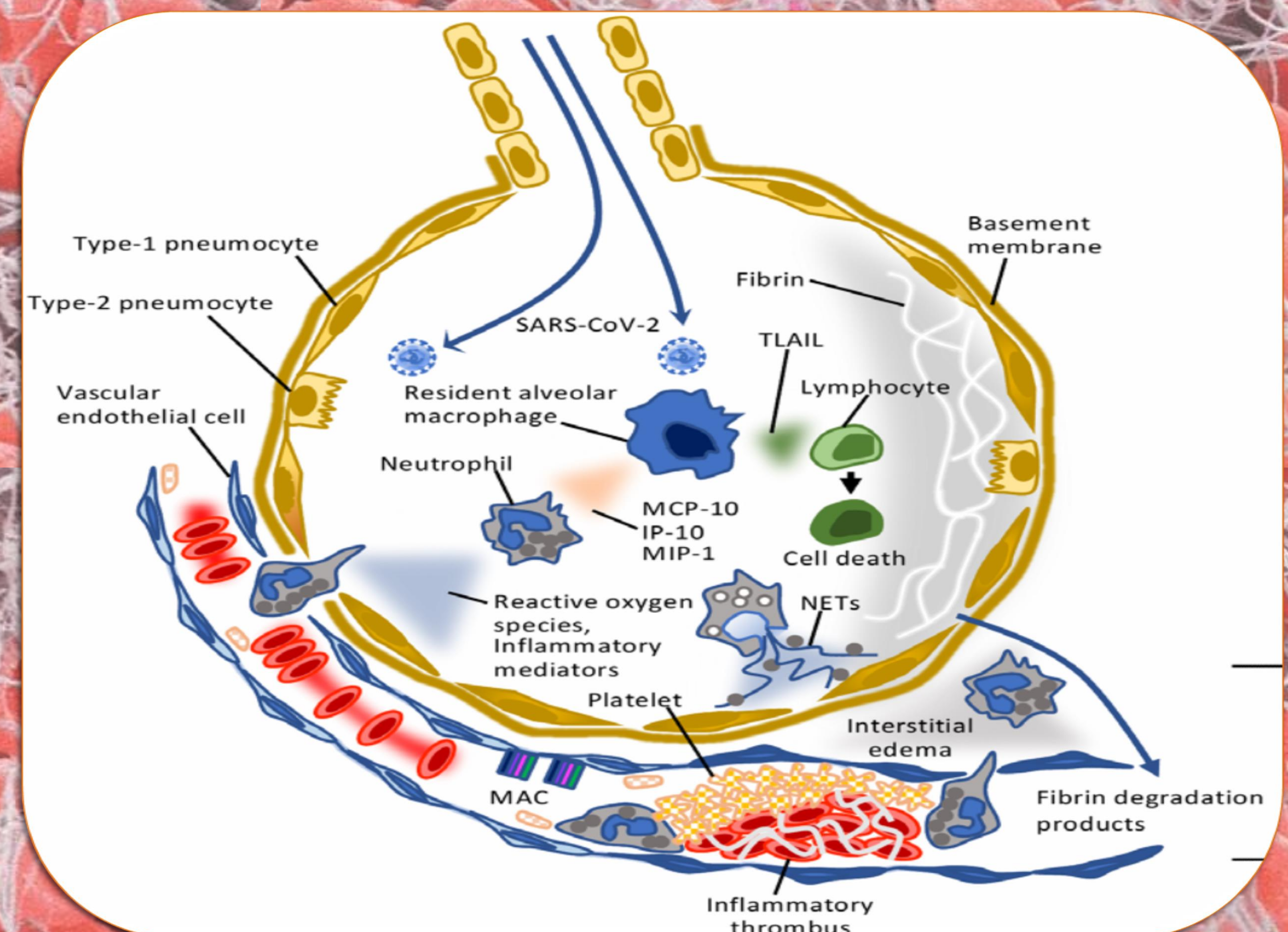
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## Background

The association between the haemostasis changes and COVID-19 disease represents a multifactorial event (figure 1). This clinical condition is related to a severe hypercoagulability state which, although transient, can be life-threatening (1-3). We describe a clinical case of haemostasis alteration in COVID-19 patients, treated with heparin whose effect was monitored using the rotational thromboelastometry (ROTEM®), a viscoelastic test.



**Figure 1- COVID-19 and haemostasis alteration**

## Materials & Methods

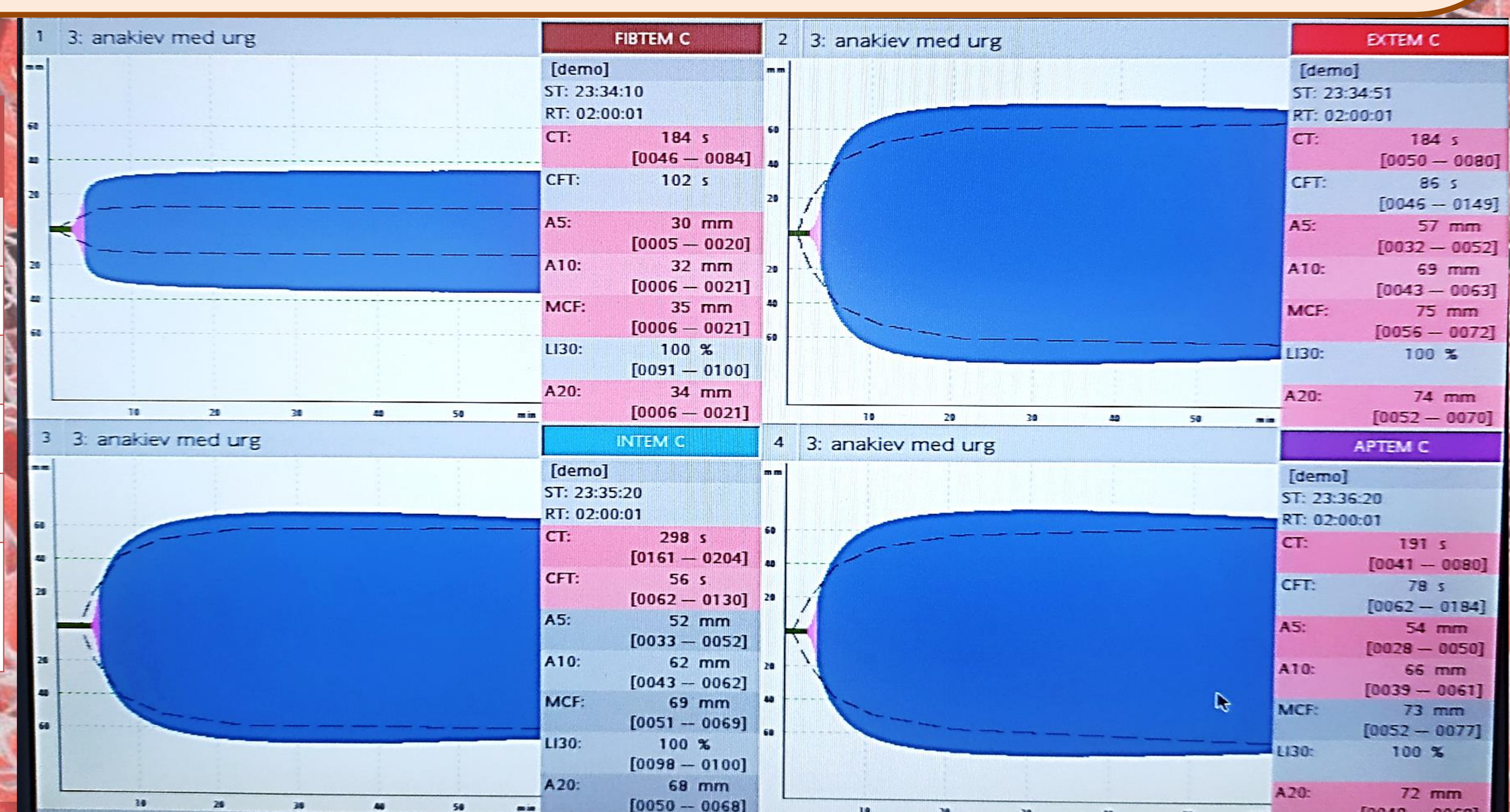
A 28 year-old male who went to the Emergency Department for chest pain and dyspnoea, referred a recent recovery from COVID-19 infection, contracted 20 days earlier.

Thoracic CT scan showed a pulmonary thromboembolism with the involvement of several lobar segments. In ICU he was treated with continuous infusion of heparin and a close coagulation monitoring. Twelve hours later the patient started suffering from thrombosis of the radial artery where the intravascular device was placed. Therefore, heparin infusion had been increased and the coagulation assessment was realized not only with common blood (table 1) tests but also with the ROTEM® (figure 2). This exam analyses the clotting network focusing on four different point of views: fibrinogen and platelets interaction (FIBTEM), intrinsic pathway (INTEM), extrinsic pathway (EXTEM) and the clot stability after inhibition of fibrinolysis (APTEM). In our case, despite a lengthening clotting time due to heparin (184 sec, normal values 46-84 sec), we observed an important increase of the Maximum Clot Firmness (35 mm, normal value 6-21 mm).

### HAEMATOCHEMICAL TESTS VALUES

Platelets (U/μl)	91·10 <sup>3</sup>
PT (rv 70-120%)	49%
INR (rv 0.8-1.27)	1.54
APTT (rv 23''-36'')	65''
APTT RATIO (rv 0.8 – 1.23)	2.17
Fibrinogen (rv 150-400 mg/dl)	1121 mg/dl

**Table 1**



**Figure 2- ROTEM patient's data during heparin infusion**

## Discussion

The viscoelastic test performed during the anticoagulation therapy, allowed us to show a persistent trend towards a prothrombotic state in face of a lengthening of the global coagulation time (increase in activate partial prothrombin time and total coagulation time). This hypothesis is confirmed by the finding of a clot strength significant rising in all the test analyzed (fibrinogen activity, extrinsic pathway, intrinsic pathway and fibrinolysis).

## References

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