



XXVIII
BALKAN
CLINICAL LABORATORY
FEDERATION MEETING

AND

XIII
NATIONAL
CONFERENCE OF
CLINICAL LABORATORY

8 - 11 SEPTEMBER 2021, SOFIA

PURPOSE / OBJECTIVES

Heparin-induced thrombocytopenia (HIT) is complex clinical-biological syndrome after exposure to heparin associated with high morbidity and mortality. The diagnosis of HIT needs sensitive laboratory assays and remains challenge [1]. Immunoassays detect the presence of anti-PF4/heparin antibodies; a negative result can be used to exclude HIT; positive results are often false-positive. Serotonin release assay is a current gold standard functional assays that detect platelet-activating heparin-dependent antibodies, but is technically demanding with limited use [2].

AIM

To implement in clinical practice heparin-induced multi-electrode aggregometry method (HIMEA) standard protocol from the platelet immunology subcommittee of the ISTH as a simple and rapid functional HIT assay.

MATERIALS & METHODS

HIMEA method assess the ability of serum/plasma from suspected HIT patients to activate fresh platelets from healthy donors in the presence of several concentrations of heparin. Whole blood is collected using hirudin as an anticoagulant and is incubated in the analyzer under stirring at 37 °C for 1 min with the patient's plasma or serum and a saline solution. Saline buffer, therapeutic (1 IU/mL) and suprathereapeutic (200 IU/mL) concentrations of heparin are added into the reaction mixture and impedance changes are recorded for 15 min.

RESULTS

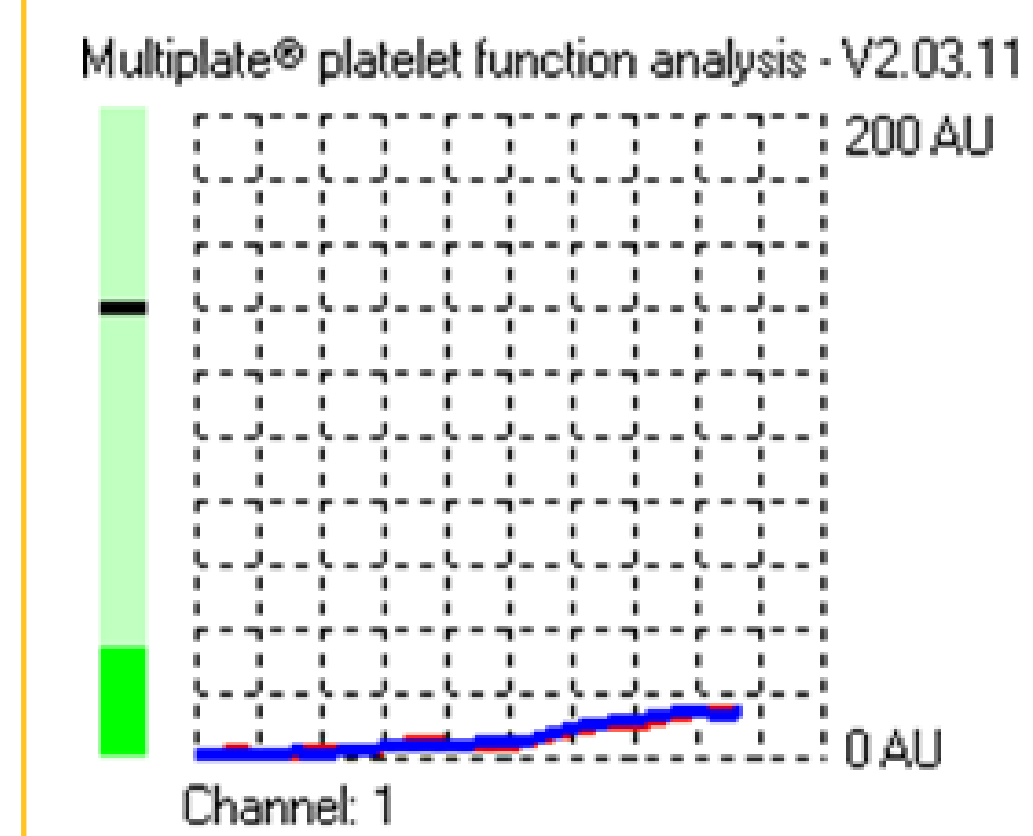
Results are considered positive if they fulfill all the fourth following criteria: a typical sigmoidal curve reflecting actual platelet aggregation; AUC (1 IU/mL UFH) > 30 U; AUC (200 IU/mL UFH) < 50% of the AUC obtained with 1 IU/mL heparin; AUC < 30 U without heparin.

Introduction of Heparin-induced multi-electrode aggregometry method for heparin-induced thrombocytopenia testing

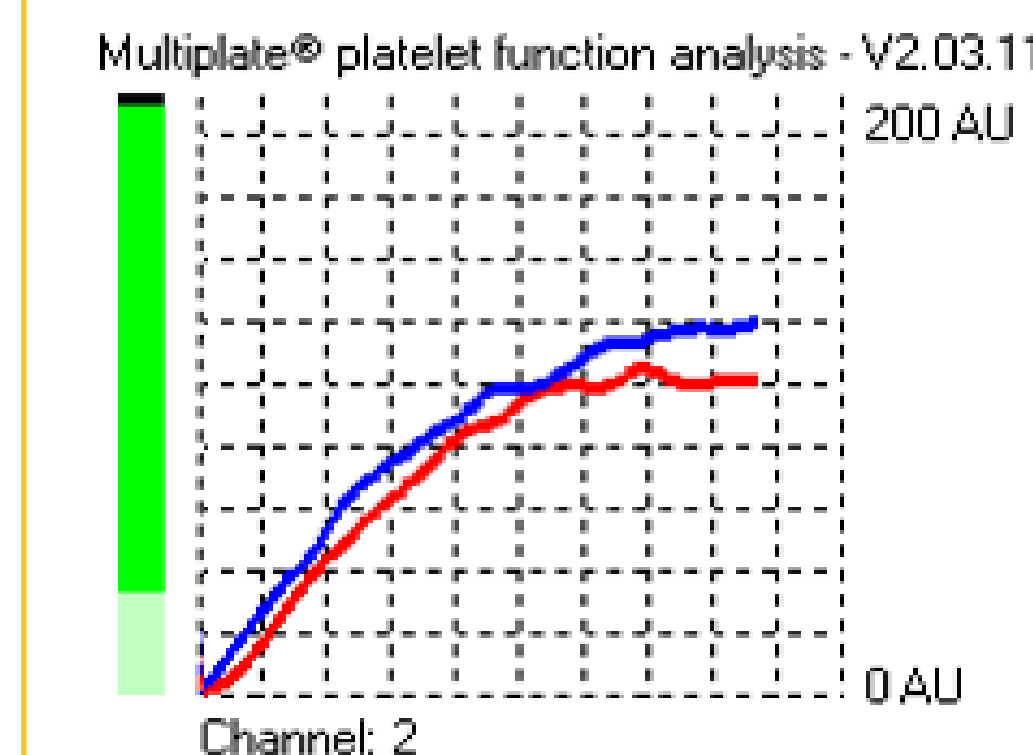
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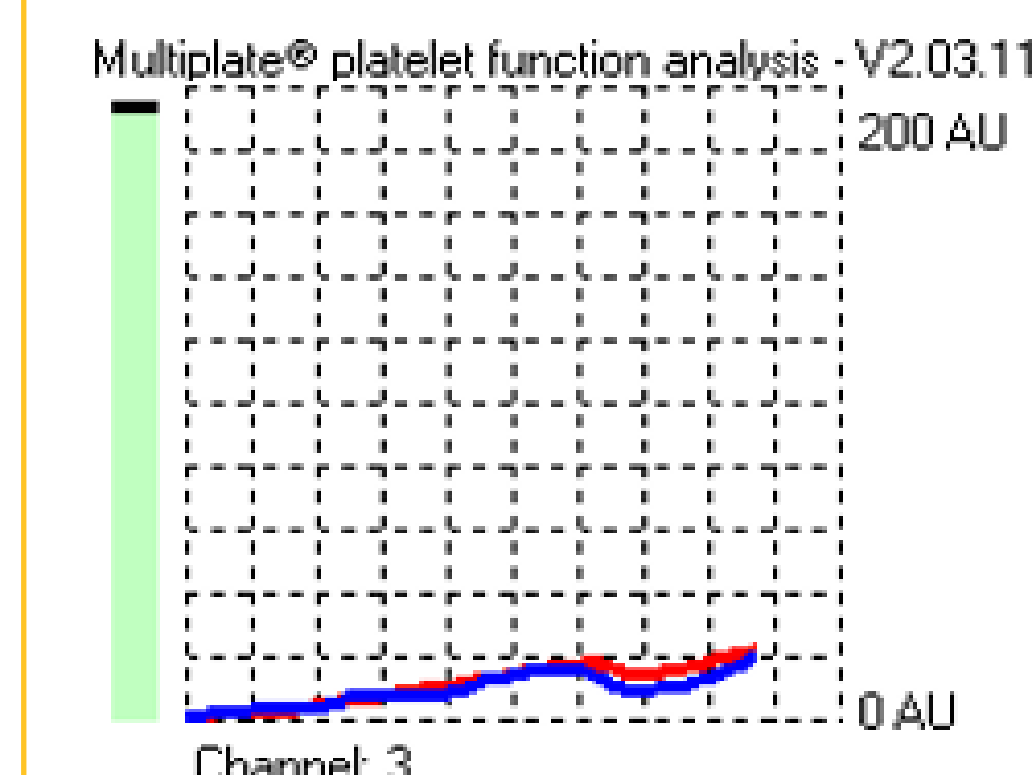
RESULTS



Patient ID : 310690
Test name : HIT saline, V1
Start of test : 16. Apr. 2021, 13:36:55 (Measurement duration 15:00 min.)
Area under the curve : 4 U (0 - 30)
Aggregation : RUO: 45.0 AU
Velocity : RUO: 5.4 AU/min.
Difference from mean : 16.827 %
Correlation coefficient : 0.992



Patient ID : 310690
Test name : HIT low dose Heparin, V1
Start of test : 16. Apr. 2021, 13:37:12 (Measurement duration 15:00 min.)
Area under the curve : 161 U (30 - 200)
Aggregation : RUO: 188.3 AU
Velocity : RUO: 39.3 AU/min.
Difference from mean : 3.620 %
Correlation coefficient : 0.796



Patient ID : 310690
Test name : HIT high dose Heparin, V1
Start of test : 16. Apr. 2021, 13:37:26 (Measurement duration 15:00 min.)
Area under the curve : 8 U (4 - 20)
Aggregation : RUO: 20.3 AU
Velocity : RUO: 4.2 AU/min.
Difference from mean : 9.942 %
Correlation coefficient : 0.946

We present a case of a 64 year old man with a medical history of AF, AVR+MVR (5 years ago) who developed HIT during COVID-19 infection.

After admission in the hospital anticoagulation therapy with VKA (Sintram) was switched to infusion with UFH. Platelets on admission were 215 G/l. On hospital day 10 patient developed thrombocytopenia with platelet count 53 G/l.

HIT was confirmed with HIMEA functional assay. Results are considered positive - they fulfill all the fourth criteria of HIMEA standard protocol. Heparin treatment was stopped immediately and the patient was started on Arixtra 7.5 mg/d for 6 days. On the sixth day of Arixtra therapy, the platelet count exceeded 100 G/L and Sintram was initiated.

SUMMARY/CONCLUSION

HIMEA functional assay have a positive impact on patient management by reducing the time taken to confirm a diagnosis of HIT.

REFERENCES

[1]. Morel-Kopp M-C et al. (2016) Heparin-induced multi-electrode aggregometry method for HIT testing: communication from the SSC of the ISTH, J Thromb Haemost; 14: 2548–52.

[2]. Tardy B. et al. (2020) Detection of Platelet-Activating Antibodies Associated with HIT, J. Clin. Med., 9, 1226;