



INTRODUCTION

An analysis of the blood coagulation system in patients with cardiovascular diseases, including during antithrombotic and antiplatelet therapy, is an actual clinical task.

AIM

to quantify the process of thrombus formation under conditions of blood flow by T-TAS technology in patients with chronic coronary syndrome (CCS) using antiplatelet therapy.

METHOD

- 140 measurements were performed using T-TAS for a functional assessment of the contribution and activation of platelets and plasma coagulation factors in the process of thrombus formation;
- collagen-coated microchip PL;
- collagen and tissue factor-coated microchip AR;
- 54 patients with CCS treated 100 mg acetylsalicylic acid;
- 16 healthy controls;

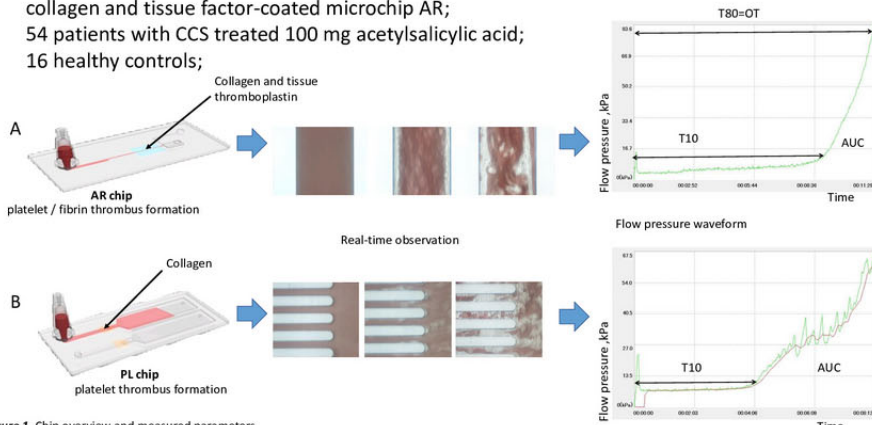
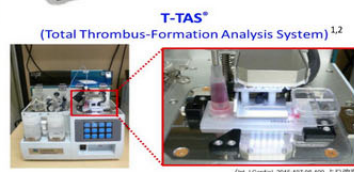


Figure 1. Chip overview and measured parameters.

A – AR chip, B – PL chip (credits to ¹); T₁₀ – time in min for the flow pressure to reach 10 kPa; T₁₀₋₈₀ – time in min for the flow pressure from 10 to 80 kPa; OT – occlusion time in min; AUC – area under the curve.



RESULTS

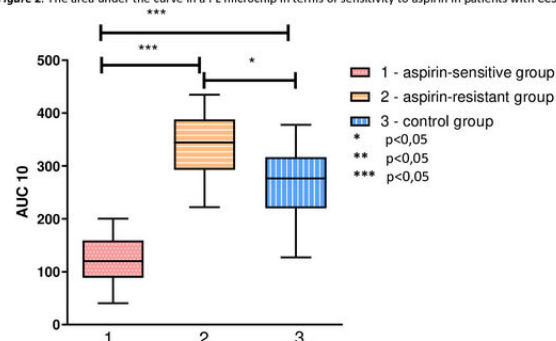
The data of the significant differences obtained in patients with CCS and control group is shown in the Table 1. Differences in PL AUC were expected in patients with CCS against the intake of antiplatelet agents.

Table 1. The data (Me (Q1-Q3)) obtained in patients with CCS and control group in PL and AR microchips.

	PL T10, sec	PL AUC	AR T10, sec	AR T80, sec	AR AUC
CCS patients	3,32 (2,40–4,54)	126,60 (69,4–233,8)	7,92 (5,32–8,88)	10,69 (8,69–12,36)	1659,3 (1584,1–1795,6)
Control group	3,23 (3,16–4,37)	256,65 (17,4–301,9)	* 8,54 (8,0–9,09)	10,64 (10,0–11,29)	1647,5 (1598,6–1696,3)

* The significant twofold decrease in PL AUC (p=0,02)

Figure 2. The area under the curve in a PL microchip in terms of sensitivity to aspirin in patients with CCS.



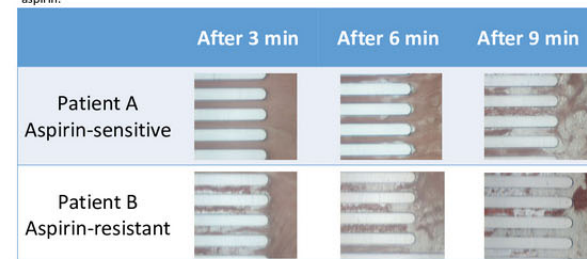
CONCLUSIONS

The value of PL AUC measured by T-TAS is a potential parameter for evaluation of the antiplatelet therapy effectiveness in patients with chronic coronary syndrome.

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The data was received about the total blood thrombogenicity in patients in terms of sensitivity to aspirin and control group. There were 18,5% aspirin-resistant patients and their T-TAS PL indicators were higher than in the controls and other CCS patients (Figure 2). The example of clot formation in a PL microchip in patient A (Aspirin-sensitive) and in patient B (Aspirin-resistant) is represented in the Figure 3.

Figure 3. The view of a PL microchip during reaction based on the example of sensitivity and resistance to aspirin.



REFERENCES

- ¹ <https://www.t-tas.info/>
- ² <https://www.eurekalert.org/>

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