Is it important to control the efficacy of antiplatelet therapy in patients with drug-eluting stents presenting for surgery ?

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Background

The European guidelines recommend ticagrelor and prasugrel as the treatment of choice for Acute Coronary Syndrome (ACS) because of their superior platelet inhibition action when compared with clopidogrel.¹ They are therefore often used when Drug-Eluting Stents (DES) are inserted. A meta-analysis comparing ticagrelor and prasugrel suggested that ticagrelor allows a higher platelet reactivity inhibition as compared with prasugrel.² Resistance to the newer antiplatelet drugs, although theoretically possible, has not yet been reported.

Case report

A DES was inserted in a 59-year-old diabetic patient after an ACS. The patient was put on dual antiplatelet therapy aspirin 80mg/day and ticagrelor 90mg 2x/day. She presented intrastent thrombosis 6 months post DES insertion despite perfect medication compliance and was successfully treated with 2 other DES. A Multiplate electrode aggregometry realized by Multiplate® Analyzer showed no ADP-induced platelet aggregation. Ticagrelor was stopped and prasugrel 160mg was started. The patient presented 4 months later for an elective peripheral vascular surgery. A Multiplate® test was realized to confirm efficient dual antiplatelet therapy (aspirin-prasugrel). Table 1 illustrates the results of the Multiplate® test under ticagrelor (at the moment of stent thrombosis) and subsequently prasugrel therapy.

Table 1: Results of Multiplate®

	Normal range	Ticagrelor and Aspirin therapy	Prasugrel and Aspirin therapy
ADP Test	607 - 963	684	397
ASPI Test	505 - 1086	365	205
TRAP Test	868 - 1473	1066	1067

Discussion

The etiology of increased platelet activation in diabetic patients is multifactorial.³ Resistance to aspirin and/or clopidogrel is well known and especially described in diabetic patients resulting in an increased cardiological use of newer antiplatelet drugs. We describe a first case of biological and clinical resistance to ticagrelor. Patients on dual antiplatelet therapy for DES and presenting for elective or emergency surgery should systematically be tested for efficacy of their antiplatelet treatment in order to adapt the perioperative management.

References

1. Eur Heart J 2012;33:2569-619;
2. J Throm Haemost 2015;13:931-42;
3. Curr Cardiovasc Risk Rep 2015;9:4

Learning points

1. This case illustrates that resistance to newer antiplatelet medications can occur.
2. Point-of-Care functional platelet tests are easy to perform and can rapidly confirm the efficacy of antiplatelet therapy in patients with DES.