

## Implications of a sub-optimal response to Clopidogrel in Vascular Surgical Patients

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Since the publication of NICE TA 210 in 2010 and NICE CG 147 in 2014 a high proportion of patients with vascular disease are prescribed clopidogrel as part of the medical management of their arterial disease. Many of these patients present for urgent surgery having taken clopidogrel within the last few days. Guidelines vary, but most recommend omitting clopidogrel for a period of time prior to elective surgery (usually somewhere between 5 and 10 days). When surgery is urgent, a risk benefit analysis is required to assess the relative merits, or otherwise, of proceeding with surgery and anaesthesia given a potentially increased risk of bleeding and related complications.

Because of its association with smoking, a high proportion of patients with peripheral vascular disease also have significant cardiac and respiratory disease. Consequently, in this patient group, neuraxial anaesthesia is often the anaesthetic technique of choice. However, most anaesthetists are understandably reluctant to perform a spinal or an epidural in patients who have recently (within the last few days) taken clopidogrel for fear of causing a spinal haematoma with consequent neural compression.

At our institution part of the risk assessment involves checking the degree of platelet ADP receptor inhibition using either the Rotem Multiplate or TEG platelet mapping. We noticed that a high number of the platelet mapping tests showed a reduced response to clopidogrel (sub-optimal response defined as < 30% ADP receptor inhibition).<sup>2</sup>

Reviewing our data we found 20 out of 27 (74%) of platelet mapping tests had been performed in vascular surgical patients. 14 out of 20 (70%) of these test results showed a sub-optimal response rate to clopidogrel. None of these patients had their procedures post-poned and 10 out of 14 (71%) of them had their procedure performed using a neuraxial anaesthetic technique. None of the patients had any bleeding related complications. Of the patients who did have platelet inhibition due to clopidogrel, one patient was cancelled, one received pre-operative platelets, 3 had a general anaesthetic and one had a peripheral nerve block instead of a neuraxial block.

Whilst a lack of response to clopidogrel is reassuring and perhaps fortuitous for the vascular anaesthetist, there is a bigger picture. The rate of sub-optimal response to clopidogrel in the general population is thought to be about 30%.<sup>(1)</sup> Despite the small sample size, the sub-optimal response rate in our group of vascular patients (70%) is significantly different to the widely quoted 30%. This begs the question: 'Are these patients requiring surgery because clopidogrel was not working for them and thus their vascular pathology has progressed? It may be that those patients who are sub-optimal responders are more likely to go on to require surgery. If so, it may be possible to tailor anti-platelet therapy (for example choosing Aspirin, Prasugrel, Ticagrelor or a larger dose of clopidogrel, etc.) which could result in reduced complications and therefore overall cost.

1. Matetzky S., Shenkman B., Guetta V. Clopidogrel resistance is associated with increased risk of recurrent atherothrombotic events in patients with acute myocardial infarction. *Circulation*. 2004;109:3171–3175. [PubMed]