Correspondence

Utility of Plasma Matrix Metalloproteinase-9 as a Possible Diagnostic Marker of Endoleak Post Endovascular Aneurysm Repair

Dear Editor,

In a recent article published in the European Journal of Vascular and Endovascular Surgery, Hellenthal et al. provided further evidence that plasma biomarkers, such as matrix metalloproteinase-9 (MMP-9), may be a valuable adjunctive diagnostic tool for predicting the presence of an endoleak post endovascular aneurysm repair (EVAR).1

Although EVAR compares favourably to open surgical abdominal aortic aneurysm (AAA) repair in terms of short term mortality and morbidity, the potential longer term complications mandate the lifelong follow up post procedure. The cost involved with the surveillance program, and the inconvenience for the patients to partake in a lifelong surveillance, remain a significant issue.2 Therefore, the discovery of potential diagnostic plasma biomarker(s) for the purpose of endoleak detection would represent a breakthrough in current standard clinical practice; it would also underpin the ethos of surgical translational research.

In our search for potential plasma biomarkers for clinical applications, it is critical to examine the pre-analytical factors which may affect quantitative measurements of the biomarkers. MMP-9 is known to be affected by several pre-analytical issues, including the kind of sample matrix collected or the type of anti-coagulants used for the preparation of plasma. Blood components such as white blood cells and platelets are sources of MMP-9 and may release MMP-9 ex-vivo during the coagulation process. It has been shown that serum levels of MMP-9 are higher than that measured in paired plasma, and that higher levels of MMP-9 are measured in EDTA buffered plasma compared to paired lithium heparin plasma.3,4

Given the pre-analytical influence on the measured MMP-9 levels, it would be worthwhile for research publications, such as the report by Hellenthal et al., to include the sample preparation protocol as part of the methods section. This will allow for comparisons between studies, and to guide potential clinical applications in the future.

Acknowledgement

Regent Lee is a Lumley Surgical Research Fellow and Foundation of Surgery Research Scholar with the Royal Australasian College of Surgeons.

References


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Dear Sir,

We would like to thank Lee and Handa for their interest in and commentary on our report. We share their views on the influence of pre-analytical processing on the measured MMP-9 levels. Moreover, we support the necessity of inclusion of the sample preparation protocol for comparisons between studies. However, since the nature of this article was a short report, we were unable to report details of the materials and methods. We therefore gladly provide the details on the pre-analytical processing of our samples and assay protocol in the present reply.

Blood Collection

Venous blood was drawn via an antecubital vein puncture and collected in EDTA buffered (K2E 7.2 mg) vacutainer® for plasma. Exactly