

Category :**Hematology: Other**

A127 - Viscoelastic testing in Covid-19 infection demonstrates a resistance to Low Molecular Weight Heparin

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Introduction:

A significant degree of mortality and morbidity in Covid-19 is due to thromboembolic disease. We use viscoelastic testing to investigate changes to coagulation profile over the progression of Covid-19 infection.

Methods:

Patients presenting to a single large University Teaching Hospital ED were recruited at presentation. Those with positive Covid-19 PCR test were included for analysis. Whole blood samples were taken for viscoelastic tests. Fractal Dimension (Df) and Time to Gel Point (T_{GP}) are biomarkers of thrombogenicity which measure the biomechanical properties of the incipient clot[1].

Patients were followed up throughout their hospital stay, with sampling taken at arrival, after 24 hours, 3-5 days and 7 days. Length of stay and patient outcome were recorded and used for subgroup analysis. Once admitted to the hospital all patients received Low Molecular Weight Heparin (LMWH) as per standard treatment pathways, if commenced before the first sample was taken, this was recorded and controlled for.

Results:

Df and T_{GP} showed no changes over time in Covid-19 infection. Subgroup analysis also showed no differences in Df or T_{GP} in different outcome groups.

Patients who received LMWH from the clinical team before recruitment to the study demonstrated no significant difference in Df (1.715 ± 0.061 no LMWH vs 1.699 ± 0.068 with LMWH), but T_{GP} was prolonged in those receiving LMWH (445.0 ± 195.2 vs 307.6 ± 91.6). Additionally there was no correlation between Anti-Xa level and Df.

Conclusion:

The therapeutic efficacy of LMWH appears to be blunted in Covid-19 infection. This may be due to the inflammatory state creating a resistance to the activity of LMWH, and may in part explain why LMWH appears to have less effect in reducing thromboembolic disease in Covid-19 than it does in other disease states.

References:

Evans et al, Blood 2010