Category :**Respiratory: other**

A113 - ***Clot microstructure (df) as a biomarker and measurement of thrombogenicity in acute exacerbation of chronic obstructive pulmonary disease (aecopd)***

S Pillai [1] ; JC Zaldua [1] ; M Lawrence [1] ; J Whitley [1] ; M Howard [1] ; O Watson [1] ; K Harrison [2] ; K Hawkins [3] ; K Morris [4] ; PA Evans [1]

[1]Welsh Centre for Emergency Medicine Research, Emergency Department, Morriston Hospital, Swansea, United Kingdom, [2]Morriston Hospital, Swansea, United Kingdom, [3]Swansea University, Swansea, United Kingdom, [4]Cardiff Metropolitan University, Cardiff, United Kingdom

Introduction:

COPD is a chronic inflammatory condition that leads to lung parenchymal changes and microvascular damage. There is an increased incidence of venous thromboembolisms and in particular pulmonary embolism during exacerbations (15-30%). The aim of the study was to investigate whether there is a difference in clot microstructure between stable (SCOPD) and acute exacerbations of COPD (AECOPD) using the functional biomarker fractal dimension (d_f)

Methods:

30 ambulatory SCOPD patients were recruited from the chest clinic and 85 AECOPD were recruited from the emergency department of a tertiary teaching hospital. Blood samples were taken to perform fractal dimension (d_f), full blood count (FBC), platelet aggregometry, PT, aPTT, fibrinogen, d-dimer, Procalcitonin (PCT), CRP and Factor XIII

Results:

The mean d_f in stable COPD patients was 1.69 ± 0.05 when compared to 1.71 ± 0.06 (p=0.02). The time to gel point (T_{GP}) that indicates the time for the initiation of blood clot was significantly lower in AECOPD group (327 ± 88 vs 275 ± 73, p=0.004). Inflammatory markers such as CRP, PCT, WBC and Neutrophils was significantly higher in AECOPD group. D-dimer was significantly higher in AECOPD group however, FXIII was significantly lower in AECOPD group. FBC and platelet aggregometry was not statistically significant between the two groups

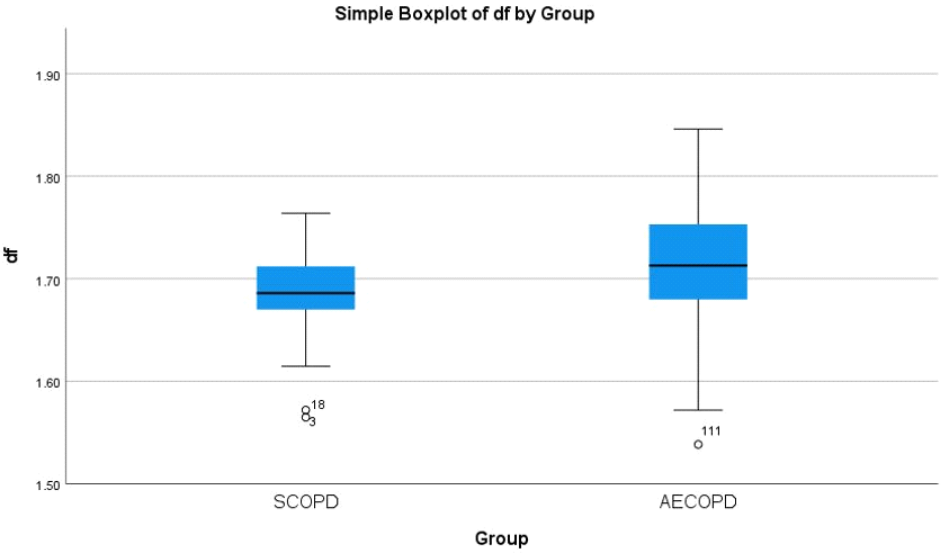
Conclusion:

COPD patients during exacerbations develop a profound inflammatory response which is associated with tighter and denser clot microstructure as indicated by significantly increased d_f. We have previously reported similar findings in sepsis. Therefore, d_f could be used to assess the underlying inflammatory effects of COPD on patient's clotting profile and future anticoagulant therapy

References:

1. Davies et al. Intensive Care Med 42:1990-1998, 2016

Image :



Df is significantly increased in AECOPD group compared to SCOPD group