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Coagulation State in Patients With Chronic Obstructive Pulmonary Disorder

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Abstract

Since there is some clinical evidence that the course of chronic obstructive pulmonary disease may be complicated by thrombosis of pulmonary vessels, this study investigated the presence of a hypercoagulable state in C.O.P.D.

plasma levels of prothrombin F1+2 fragment, a marker of thrombin generation, D-dimer, a marker of in vivo thrombin generation & plasmin activation, fibrinogen, prothrombin time and activated partial thromboplastin time were measured (for 40 C.O.P.D. patients and 30 controls of matching sex and age).

In addition a complete blood picture was performed. The C.O.P.D. patients had significantly higher values of PF_{1+2} ($P < 0.001$) and the TLC ($P < 0.001$) than healthy subjects. The D-dimer levels were found to be elevated in 47.5% of cases while normal values were found in the control. The elevated levels of PF_{1+2} and D-dimer were not correlated with PO_2 ($r = 0.1106$, $p > 0.05$) and neither was the TLC ($r = 0.0317$, $P > 0.05$). A positive correlation existed between the duration of illness and the PF_{1+2} ($r = 0.336$), ($p < 0.05$) and the D-dimer ($r = 5.402$, $P < 0.01$). There was as well a positive correlation between PF_{1+2} & D-dimer ($r = 9.5$), ($p < 0.001$) in the patients.

This study showed that C.O.P.D. patients have a prothrombotic state, as shown by increased thrombin and plasmin generation, which could account for thrombotic complications of pulmonary vessels.

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List of Abbreviations

15-HETE	15-hydroxyeicostatetraenoic acid
α_1 -Pi	Alpha 1 - Proteinase inhibitor
α_1 -AT	Alpha 1 - Antitrypsin
α_2 -PI	Alpha 2-Plasmin inhibitor
α_2 -MG	Alpha 2-macroglobulin
ADP	Adenosine diphosphate
ALP	Antileukoprotease
APC	Activated Protein C
APTT	Activated Partial Thromboplastin Time
Arg	Arginine
AT-III	Antithrombin III
ATP	Adenosine triphosphate
β -TG	Beta thromboglobulin
β_2 -GPI	Beta 2 - Glycoprotein I
BALF	Bronchoalveolar lavage fluid
BT	Bleeding Time
C.O.P.D.	Chronic obstructive pulmonary disease
C4b	Complement component 4b
CO	Cyclooxygenase
CT	Computerized tomography
DAG	Diacylglycerol
DIC	Disseminated intravascular coagulation
ECG	Electrocardiogram
ECP	Eosinophil cationic protein
EGF	Epidermal growth-factor
ELISA	Enzyme linked immunosorbant assay
Ep DRF	Epithelial derived relaxant factor
FDPs	Fibrin (ogen) Degradation Products
FEV ₁	Forced expiratory volume in first second
FPA	Fibrinopeptide A
FPB	Fibrinopeptide B

TTP

Thrombotic thrombocytopenic Purpura

V/Q

Ventilation/perfusion

vWF

von Willebrand factor

mul

involved in

renal

transmission

as a result of

insulin

secretion

regulation

and production

and

pathogenesis

renal failure

List of Figures

- Figure 1 Overview of haemostatic mechanisms
Figure 2 Thromboresistant properties of endothelium
Figure 3 Platelet function
Figure 4 The clotting cascade
Figure 5 Structural domains of the proteins involved in haemostasis and related proteins.
Figure 6 Conversion of fibrinogen to fibrin monomer.
Figure 7 Fibrinogen and thrombin-induced fibrin monomer and polymer formation.
Figure 8 Scheme of the fibrinolytic system.
Figure 9 Schematic of the pathways that generate factor Xa & thrombin, and the natural anticoagulant mechanisms that regulate the activity of these enzymes.
Figure 10 Structure of protein C, protein S and thrombomodulin.
Figure 11 Antithrombin III activity (model 1)
Figure 12 Antithrombin III activity (model 2)
Figure 13 Protein C-anticoagulant pathway
Figure 14 Protein C activity
Figure 15 Overview of haemostasis
Figure 16 Structure of prothrombin.
Figure 17 PF1+2 and thrombin generation.
Figure 18 Schematic diagram of fibrinogen degradation
Figure 19 The pathological features of chronic bronchitis and emphysema.
Figure 20 Different types of asthmatic reactions.
Figure 21 Pathogenesis of asthma
Figure 22 Link between cigarette smoking and pathogenesis of emphysema.
Figure 23 Algorithm for the treatment of respiratory failure
-

- Laboratory evaluation of prothrombotic states.....	(48)
* <i>Chronic Obstructive Pulmonary Disease</i>	
- Definition.....	(61)
- Epidemiology.....	(65)
- Pathophysiology.....	(64)
- Clinical presentation.....	(68)
- Pathogenesis.....	(69)
- Investigations.....	(73)
- Management.....	(75)
- Complications.....	(78)
- Subjects and Methods	(82)
- Results	(94)
- Discussion	(125)
- Summary and Conclusions.	(136)
- References	(137)
- Arabic Summary .	







