Institute of Postgraduate
Childhood Studies
Medical Department
Ain Shams University

STUDY OF PROTEIN - C IN CHILDREN WITH NEPHROTIC SYNDROME

Thesis
Submitted for the Partial Fulfilment
of the Ph. Degree in Medical Childhood Studies

By
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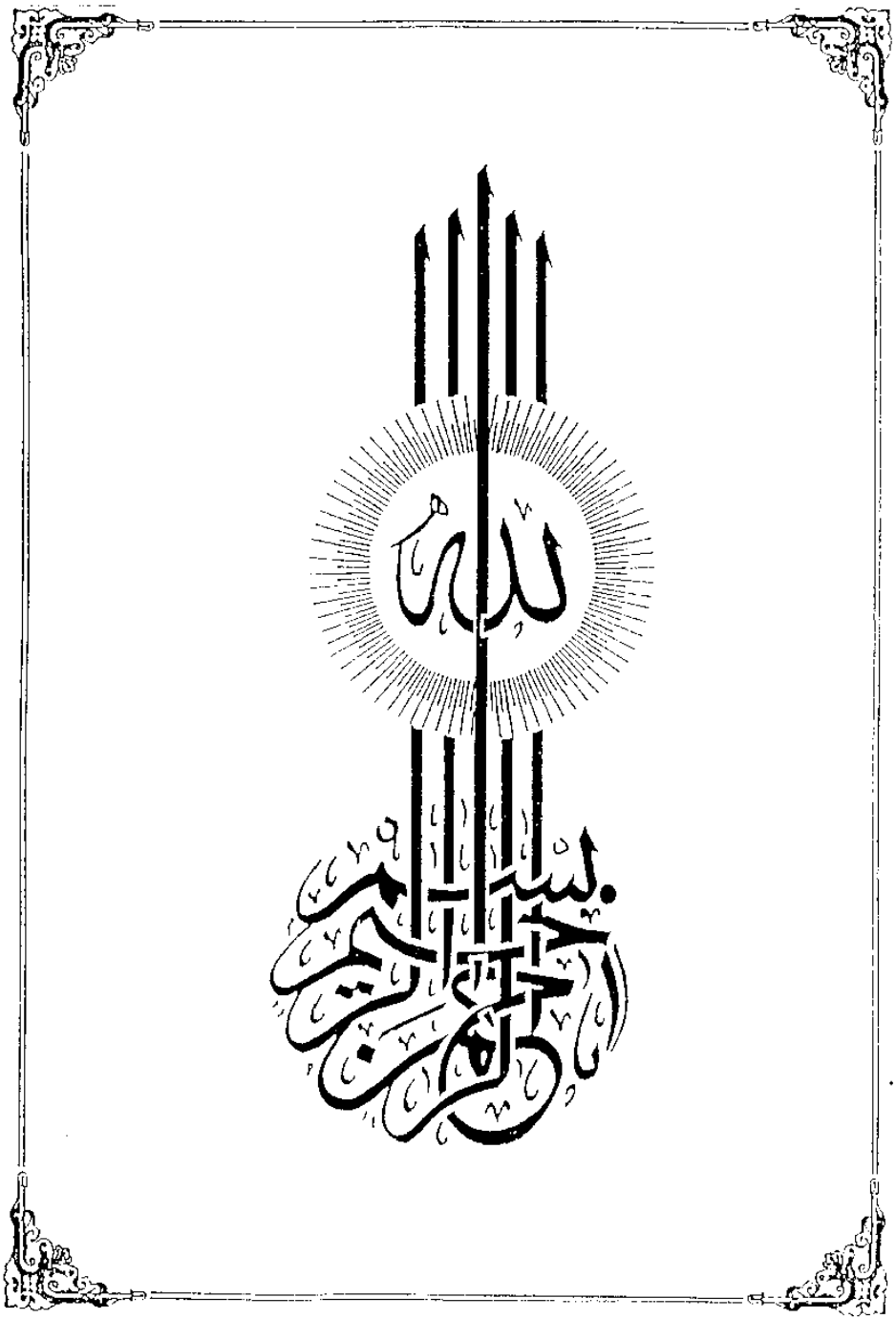

بسم الله الرحمن الرحيم

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Contents

List of Abbreviation

Ag.	Antigen .
APC	Activated protein - C
AT - III	Antithrombin - III
AVH	Acute viral hepatitis
DAVP	D - Arginine vasopressin
DIC	Dissiminated intravscular coagulation
DVT	Deep vien thrombosis
FDPs	Fibrin degradation products
FFP	Fresh frozen pkasma
GLa	Gamma carboxy glutamic acid
Hep G2	Human hepatoma cell line
PA	plasminogen activator
PAI	Plasminogen activator inhibitor
P- C	Protein - C
PCI	Protein - C inhibitor
P.T.	Prothrombin time
MCNS	Minimal change nephrotic syndrome
N.S.	Nephrotic syndrome .
SDS	Sodium dodecyl sulphate
TTP	Thrombocytopenic purpura

List of Tables

List of Figures

Introduction
&
Aim of Work

Introduction & Aim of Work

Protein C is an anticoagulant protein which plays an important role in regulating blood coagulation in vivo . It is a vitamin K - dependent glycoprotein which is synthesized in the liver . The anticoagulant effect of protein C is due to inactivation of the activated FV & VIII . In order to exert this anticoagulant activity , protein C (which circulates in the blood as a zymogen) first has to be converted to the proteolytically active form in the presence of calcium & phospholipid ***(Esmon & Esmon , 1984)*** .

In addition to its anticoagulant properties , protein C facilitate fibrinolysis ***(Fair & Marlar , 1986)*** .

Hereditary or acquired protein C deficiency is associated with a predisposition to thromboembolic diseases so , preventive measures should be instituted . In nephrotic patients , many factors contribute to hypercoagulability & thromboembolic complications including At III def , increase concentration of fibrinogens , FV , VIII & platelets hypercoagulability ***(Abdullah , 1988)*** .

The aim of our study was to estimate P - C quantity & quality in the blood of nephrotic patients for the possible role that it might play in the pathogenesis of thromboembolic complications in these patients & trial to find correlations between P - C & some hemostatic parameters .

Review of Literature

Chapter 1

Bood Coagulation

The haemostatic mechanism comprises a series of integrated reactions of the vessel wall , platelets , plasma coagulation and fibrinolytic factors directed towards maintenance or reestablishment of vascular integrity . It is a delicate balanced system influenced by vessel size , conditions of blood flow , inherited or acquired alternations of the concentrations , of coagulation , fibrinolytic & inhibitors factors , present in normal plasma or associated with a variety of pathologic conditions . Variation in any of these factors may lead to either excossive bleeding or thrombosis . Haemostasis & thrombosis may thus be looked on as the response of blood to vascular injury . So the functions of the normal haemostatic process are to prevent blood loss from intact vessels & to arrest bleeding rrom injured vessels ***(Wintrobe et al., 1981)*** .

Blood coagulation has long been considered to be an enzymatic process , according to the coagulation cascade or waterfall hypothesis ***(Davie and Ratnoff , 1994)*** most of the coagulation factors circulate as proenzymes which are converted to enzymes during the clotting process . The most obvious exception is fibrinogen , which is converted to insoluble fibrin in the final step . The function of each enzyme formed is to activate the proenzyme which succeeds it in the coagulation sequence .

The coagulation is initiated by two fundamental different mechanisms : The process of contact activation and the action of tissue factor , which proceed via two separate pathways (intrinsic & extrinsic pathways) . The end result is factor X - activation . Then they converge by activating a third common pathway leading to fibrin formation (Fig. 1) .

N.B : -

1 - The coagulation intrinsic & extrinsic system terms are widely used with reference to the reactions indicated by