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**METHODS FOR THE SCREENING AND PREVENTION
OF PREECLAMPSIA AND ITS COMPLICATIONS**

by

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A thesis

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To Nick and my parents. For their unconditional support.

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Abstract

Preeclampsia is a serious disorder of pregnancy. The syndrome is the leading cause of maternal mortality in the United Kingdom and it also contributes significantly to perinatal morbidity and mortality. Maternal mortality is primarily due to cerebral complications.

Despite continued research, the aetiology of preeclampsia remains unknown. This has limited the development of screening, preventive and therapeutic measures to control the syndrome.

Present management is based on basic screening to detect early signs of the syndrome, observation of its progress and occasionally therapeutic intervention to control hypertension. Delivery is timed to prevent maternal and fetal complications, while simultaneously aiming to gain fetal maturity. Unfortunately, in many situations this control is not possible.

Owing to an increasing understanding of the pathogenesis of the disease, a new option for prophylaxis - low-dose aspirin - may soon be available. If prevention of preeclampsia becomes a reality, a simple but sensitive screening test will be required to select those women who will benefit from treatment.

This thesis is focused on the prevention of preeclampsia and its complications. It will involve examination of screening tests, the preventive therapy low-dose aspirin, and the preliminary assessment of a new technique to detect women at risk for developing cerebral complications from the disease.

CONTENTS

CHAPTER I

INTRODUCTION.....	1
Background	2
Significance of Preeclampsia	2
Definition.....	3
Aetiology and Pathogenesis.....	3
<i>The Placenta</i>	4
<i>Other Factors</i>	5
<i>Prostaglandins</i>	6
Management.....	7
A New Preventive Treatment	8
Low-dose Aspirin	8
Clinical Trials	8
CLASP	10
Potential Adverse Effects of Aspirin in Pregnancy	11
Aspirin Metabolism	11
Haemorrhage	12
Maternal Effects	13
Fetal Effects	13
<i>Haemorrhage</i>	13
<i>Abruption</i>	14
<i>Teratogenicity</i>	14
<i>Premature Closure of the Ductus Arteriosus</i>	15
<i>Intellectual Function</i>	16
Conclusion.....	17
A Screening Test For Preeclampsia	17
Philosophy of Screening	17
Screening for Preeclampsia.....	18
History of Screening Test.....	18
Tests of Altered Vascular Reactivity	18
Biochemical Tests.....	18
Haematological Markers.....	20
Biophysical Studies.....	20
The Angiotensin Sensitivity Test (AST)	21
Infusion of Pressor Agents	21
The Renin-Angiotensin System	22
The Mechanism of the AST.....	25
Modification of the Angiotensin II Response.....	26
The Present Trial.....	27

CHAPTER II

PATIENTS AND STUDY DESIGN	29
Design of the Study.....	30
Structure of the Main Trial	30
Calculation of Numbers.....	30
Site of the Study	32
Recruitment	32
Numbers Involved in Each Study.....	33
Follow-up	33
Information Database.....	33
Direction of Analysis.....	33
Computers	35

CHAPTER III

THE ANGIOTENSIN SENSITIVITY TEST (AST) AND LOW-DOSE ASPIRIN AS A PREVENTIVE AGENT FOR PREECLAMPSIA	36
Introduction.....	37
Angiotensin II Preparation.....	37
Preparation and Administration of the AII Infusion	37
Definition of the AST Result.....	39
CLASP Trial.....	39
Statistical Tests	40
Results	40
Angiotensin Sensitivity Test	40
Outcome.....	46
Angiotensin Potency.....	51
The AST as a Screening Test.....	51
Discussion	54
Low-Dose Aspirin	54
Angiotensin Sensitivity Test	56

CHAPTER IV

SCREENING: MEASUREMENT OF THE FETAL ABDOMINAL CIRCUMFERENCE AND MATERNAL HAEMATOCRIT	60
Background	61
Fetal Abdominal Circumference.....	61

Maternal Haematocrit	61
Methods	62
Fetal Abdominal Circumference.....	62
Maternal Haematocrit	63
Statistical Analysis.....	63
Results	64
Fetal Abdominal Circumference.....	64
<i>Comparison to AST</i>	64
<i>Comparison to Pregnancy Outcome</i>	64
Maternal Haematocrit	64
<i>Comparison to AST</i>	64
<i>Comparison to Pregnancy Outcome</i>	64
Discussion	69

CHAPTER V

SCREENING: 24 HOUR AMBULATORY BLOOD PRESSURE	71
Background	72
Numbers.....	73
Materials and Methods	73
The ABP Monitor.....	73
Subjects.....	75
24 Hour ABP Monitoring.....	75
Results	76
Static Accuracy.....	76
24 Hour Ambulatory Blood Pressure	78
<i>Awake Readings</i>	78
<i>Sleep Readings</i>	81
<i>"Clinic" Readings</i>	81
Value of ABP for the Prediction of Preeclampsia	83
Comparison of ABP to the AST	83
Discussion	83

CHAPTER VI

SCREENING: PLATELET INTRACELLULAR FREE CALCIUM RESPONSE TO ARGININE-VASOPRESSIN STIMULATION	90
Background	91
Mechanism of Platelet Activation	91
Methods to Detect Platelet Activation	92
Intracellular Free Calcium.....	93

Fluo-3	94
Arginine-Vasopressin	95
Pregnancy Studies of Platelet Intracellular Calcium	96
Materials and Subjects	97
Method	98
Platelet Intracellular Free Calcium Measurement	98
Angiotensin Sensitivity Test	99
Flow Cytometry Measurements.....	99
Statistics	103
Results	103
Calculation of Results.....	103
Arginine-Vasopressin Concentration.....	105
Validation	105
Proteinuric Preeclampsia and Matched Controls.....	105
Normotensive Nulliparous Women at 28 Weeks Gestation	109
Comparison Between Nonpregnant and Pregnant Women.....	109
Discussion	114

CHAPTER VII

SCREENING: INACTIVE URINARY KALLIKREIN / CREATININE.....	119
Background	119
The Kallikrein-Kinin System	119
Similarities to the Renin-Angiotensin-Aldosterone System	119
Kallikrein	
<i>Plasma Kallikrein</i>	121
<i>Tissue Kallikrein</i>	121
<i>Inactive and Active Kallikrein</i>	122
Methods for Measurement	122
Urinary Kallikrein in Essential Hypertension	123
Pregnancy Studies	124
Method	125
Materials.....	125
Determination of Inactive Urinary Kallikrein (IUK)	125
Statistics	127
Results	127
Comparison to the Angiotensin Sensitivity Test.....	127
Comparison to Pregnancy Outcome	127
Discussion	130

CHAPTER VIII

THE MATERNAL CEREBRAL RESPONSE TO AN ACUTE BLOOD PRESSURE RISE: TRANSCRANIAL DOPPLER ULTRASOUND (TCD) OF THE MIDDLE CEREBRAL ARTERY DURING ANGIOTENSIN II INFUSION.....	134
Background	135
Subjects and Methods	138
Angiotensin Sensitivity Test.....	138
Middle Cerebral Artery Doppler Recordings.....	138
Statistical Analysis	138
Results	139
Intra and Inter-observer Variation.....	139
Conditions of Measurement.....	142
Angiotensin II Infusion Study	142
Discussion.....	148

CHAPTER IX

CONCLUSIONS	151
Screening Tests	152
Low-Dose Aspirin.....	153
Transcranial Doppler Ultrasound.....	154
Conclusion.....	155
REFERENCES	156

List of Tables

1.1	Tests for the Early Identification of Preeclampsia.....	19
1.2	Predictive Values of the Angiotensin Sensitivity Test (AST)	24
2.1	Investigations Performed During the Study	31
2.2	Numbers Involved in Each Study.....	34
3.1	Clinical Characteristics of the AST Negative and Positive Women	42
3.2	Clinical Features of the AST Positive Women Randomised to CLASP.....	43
3.3	Incidence of a Positive Angiotensin Sensitivity Test.....	44
3.4	The Assessment of the Potency of "Hypertensin".....	45
3.5	Pregnancy Outcome of the Negative and Positive AST Women	47
3.6	Outcome of the Women Randomised to Aspirin or Placebo.....	48
3.7	Clinical Features of the Women According to Pregnancy Outcome.....	49
3.8	Delivery Outcomes of Women According to Pregnancy Outcome	50
3.9	Incidence of Preeclampsia Related to AST Threshold (EPD)	52
3.10	Overall Predictive Values of the Angiotensin Sensitivity Test.....	53
4.1	Corrected Fetal Abdominal Circumference and Pregnancy Outcome	65
4.2	Haematocrit Values in AST Positive and Negative Women.....	66
4.3	Haematocrit Values According to Pregnancy Outcome.....	67
4.4	Preeclampsia Rates by Haematocrit Value	68
5.1	Static Accuracy Results	77
5.2	Clinical Features of Ambulatory BP Pregnancy Outcome Groups	79
5.3	Ambulatory BP Measurements According to Pregnancy Outcome	80
5.4	Preeclampsia Rates by Diastolic Pressure.....	84
5.5	Predictive Values of Awake Ambulatory BP and Heart Rate	85
5.6	Comparison of Ambulatory BP According to AST Result.....	86
6.1	Platelet Dye (Fluo-3) Loading Conditions.....	104
6.2	Clinical Features of Women with Proteinuric Preeclampsia and Controls	108
6.3	Arginine-Vasopressin Stimulation in Negative and Positive AST Women	111
6.4	Clinical Features of Women with Platelet Testing at 28 Weeks Gestation.....	112
7.1	IUK/Cr Levels and the AST Result.....	128
7.2	Efficacy of the IUK/Cr and the AST for Predicting Preeclampsia.....	131
7.3	IUK/Cr Levels and Overall Pregnancy Blood Pressure.....	133
8.1	Intra and Inter-observer Agreement in TCD of the Middle Cerebral Artery	140
8.2	Conditions of Measurement for Transcranial Doppler Ultrasound	143
8.3	Middle Cerebral Artery TCD Recordings During the AII Infusion	144

List of Figures

5.1 The TM2420 Monitor and TM2020 Decoder	74
5.2 Awake and Sleep Ambulatory Mean Arterial Pressure.....	82
6.1 Flow Cytometry Fluorescence Recording of Arg-Vasopressin Stimulation.....	100
6.2 Flow Cytometry Fluorescence Recording of 4-bromo-A23187 Stimulation.....	101
6.3 Titration Curves for 4-bromo-A23187 Stimulation.....	102
6.4 Titration Curves for Arginine-Vasopressin Stimulation.....	106
6.5 Individual Reproducibility of Platelet Arginine-Vasopressin Stimulation	107
6.6 Arginine-Vasopressin Stimulation in Proteinuric Preeclampsia and Controls	110
6.7 Arginine-Vasopressin Stimulation at 28 Weeks and Pregnancy Outcome	113
6.8 Titration Effects of Arginine-Vasopressin in Four Groups of Women.....	115
7.1 The Renin-Angiotensin-Aldosterone and Kallikrein-Kinin Systems.....	120
7.2 Maximum Dose of Angiotensin II Versus the IUk/Cr Result	129
8.1 Schematic Diagram of the Cerebral Arteries.....	136
8.2 Intra and Inter-observer Variation in TCD of the Middle Cerebral Artery.....	141
8.3 MCA Flow Velocity Waveform during the Angiotensin II Infusion	146
8.4 Relationship Between Changes in Blood Pressure and Flow Velocity	147

Abbreviations

5HT	serotonin
ABP	ambulatory blood pressure
AII	angiotensin II
AC	abdominal circumference
ANOVA	analysis of variance
AST	Angiotensin Sensitivity Test
AUK	active urinary kallikrein
BP	blood pressure
BPM	beats per minute
CLASP	Collaborative Low-dose Aspirin Study in Pregnancy
CV	coefficient of variation
EPD	effective pressor dose
FVW	flow velocity waveform
HMWK	high molecular weight kininogen
IUGR	intrauterine growth retardation
IUK	inactive urinary kallikrein
IUK/Cr	inactive urinary kallikrein / creatinine ratio
JRH	John Radcliffe Hospital
K5	Korotkoff Phase 5
MAP	mean arterial pressure
MAXA2	maximum angiotensin II dose
MCA	middle cerebral artery
NPV	negative predictive value
OD 405	optical density 405 nM
PGE1	prostaglandin E1
PGE2	prostaglandin E2
PGI2	prostacyclin
PI	pulsatility index
PPV	positive predictive value
QCH	Queen Charlotte's and Chelsea Hospital
SD	standard deviation
SENS	sensitivity
SPEC	specificity
TCD	transcranial Doppler ultrasound
TXA2	thromboxane A2