A STUDY OF ALPHA-FOETO PROTEIN IN AMNIOTIC FLUID AND CORD BLOOD IN HIGH RISK PREGNANCIES

THESIS

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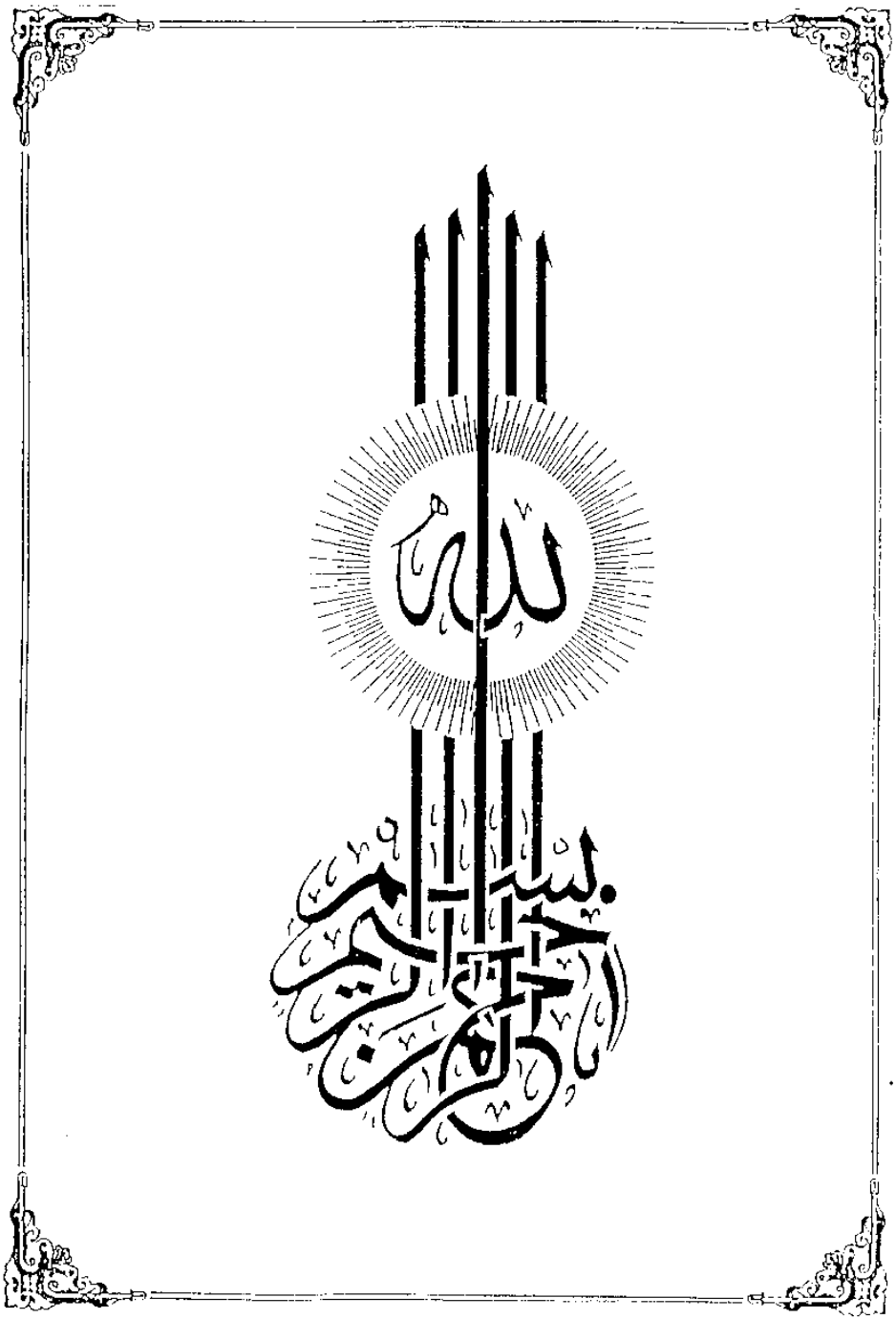

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INTRODUCTION

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The prevention of foetal malformations and abnormalities has long been the hope of obstetritions, paediatricians and geneticists, but since the cause of most human malformations is unknown, this must remain a dream for the present. However, with the introduction of mid-trimester amniocentesis it is now possible to detect some foetal abnormalities, or high risk pregnancies early enough for selective termination of pregnancy for the sake of mother and foetus (Babson et al., 1979).

Among the diagnostic applications of amniocentesis, is the determination of alpha-foetoprotein levels in the amniotic fluid as a new method of antenatal diagnosis. (Emery 1975).

Interest in this protein has been developed primarly on the clinical observations that it may reappear in the serum in elevated amounts in adult life in association with normal restorative processes such as "liver regeneration" and with malignant growth, (Tomasi, 1977).

Alpha foeto protein is a foeto specific α_1-globulin which might be detected in the human conceptus from the 29th day after conception (Gitlin et al, 1972).

This foetoprotein is thought to be transferred from the foetal to maternal circulation; partly directly through the placental barrier, partly via the foetal urine to the amniotic fluid, and also across the foetal membranes, (Kjessler et al., 1977).

Determination of the alpha foeto protein content of the amniotic fluid and foetal cord blood has been shown to be of some value in the diagnosis of some major anomalies in the foetus, such as neural tube defects, exomphalus and congenital nephrotic syndrome; yet its value in the diagnosis of high risk pregnancies is still relatively new (Weiss et al., 1977).

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Pregnancy is a normal physiological state for survival of man kind, however it is a stressful condition. It carries a potential risk to the mother and perinate.

Foetal morbidities and mortalities are not only medical problems, but also social and economic problems due to foetal wastage with all its dramatic hazards and sequelae.

The aim of this study is to find out the correlation between high risk pregnancies, and alphafoeto protein levels in cord blood and amniotic fluid consequently such a correlation might be used as a sensitive indicator of foetal outcome in high risk pregnancies in an attempt to reduce foetal hazards.

REVIEW OF LITERATURE

Perinatology as a New Concept:

High perinatal morbidity and mortality levels are no longer acceptable as natural hazards of childbirth. Limitation in family size and expectation of normal progeny have become the goals of every society regardless of position or race, (Decker, 1975).

High-risk pregnancy is benefited not only by the expanded attention to general factors such as maternal hygiene, nutrition and social aspects of family relationship, but also by specific newer methodology, such as antenatal genetic and biochemical diagnosis, physiological maturity testing of the foetus, and ultrasonic scanning for foetal growth and development, (Babson, 1979).

The obstetrician trained in materno-foetal medicine and the pediatrician trained in neonatology are using their combined knowledge in bridging the gap in foetal and neonatal care. Instead of what has been fragmented care in the past there develops

a sophisticated team approach including the specialist nurses, social workers, public health nurse and laboratory and paramedical personnel as participating team members, (Lesinski, 1975).

Childbirth still causes much needless fear and anxiety among women. Many obstetric disorders are emotionally induced, or are aggravated by psychological factors. The antenatal period offers a unique opportunity to study and treat the fears, anxieties, and conflicts related to gestation, child birth - and motherhood. Better understanding, formation and acceptance of healthy attitudes can make an invaluable contribution to the mental health and happiness of the mother-to-be and her family, (Babson, 1979).

Counselling can do much to prevent and treat many troublesome psychic or somatic complications, (Maeder, 1975).

Severe prolonged tension, due to various causes, may alter the foetal environment or the hormonal balance in the delicate maternal-placenta-foetal relationship and this impair foetal development, (Altshuler, 1975).

High Risk Pregnancy:

High risk pregnancy is that pregnancy which carries a higher risk to the mother or the perinate than the normal pregnancy, (Casalino, 1975).

Over the past twenty years, there has developed in the more advanced countries, an increasing interest in the foetus. The motive behind it was the state of obstetric services they fulfilled, the trends of their statistics - and the advance in technology.

It is of importance to mention that in the United Kingdom, the annual economic cost for handicapped children is less than that for the maternity services, one can understand why it is economically worth while to spend more in decreasing perinatal morbidity. (Maeder, 1975).

There was fear that the drop in perinatal mortality, might result in an increase in the number of handicapped, poor learners, and mentally retarded children. However, up to the present time there is no actual statistical proof to uphold this fear,(Stiehm 1975).

The philosophy of obstetrics over the last 25 years has been that good maternal care will automatically provide what is best for the foetus. Nowadays, this is not acceptable and direct interest in the foetus is advisable. (Lehtovirta 1978).

Factors Related to Intrauterine Jeopardy:

The mother may have a serious health problem, obstetric disorder, poor social environment or biological handicap which all might affect the foetus. (Aeford et al., (1975).

Among the high-risk factors contributing to perinatal mortality and morbidity in infants and children are:

* Family history of serious heritable and familial abnormalities; for example, osteogenesis imperfecta, or mongolism.

* History of prematurity or small for - date births in previous pregnancies.

* Significant congenital anomalies involving the central nervous system, heart, skeletal system,

pulmonary abnormalities or blood dyscrasia including anaemias.

* Severe social problem, for example, teen - age pregnancy, drug addiction, or absence of father.

* Long, delayed or absent prenatal care, and unattended labor.

* Mothers aged less than 18 or over 35 years old.

* Mother's height less than 150 cm and prepregnant weight or height of more than 20% under or over the local standards for weight and height, respectively.

* Grand multiparous women, or repeated non spaced pregnancies.

* History of prolonged infertility and/or essential drug or hormone treatment, especially teratogenic drugs.

* Teratogenic viral infections in the first trimester.

* Stressful events; for example, severe emotional tension, hyperemesis gravidarum, general anaesthesia, shock, or extensive exposure to radiation.