Ain Shams University
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Morphological Changes
In the Human Amnion Epithelium that Accompany Labor As Seen with Transmission Electron Microscopy

Thesis
Submitted for partial fulfillment of the
Master Degree in Obstetrics and Gynecology

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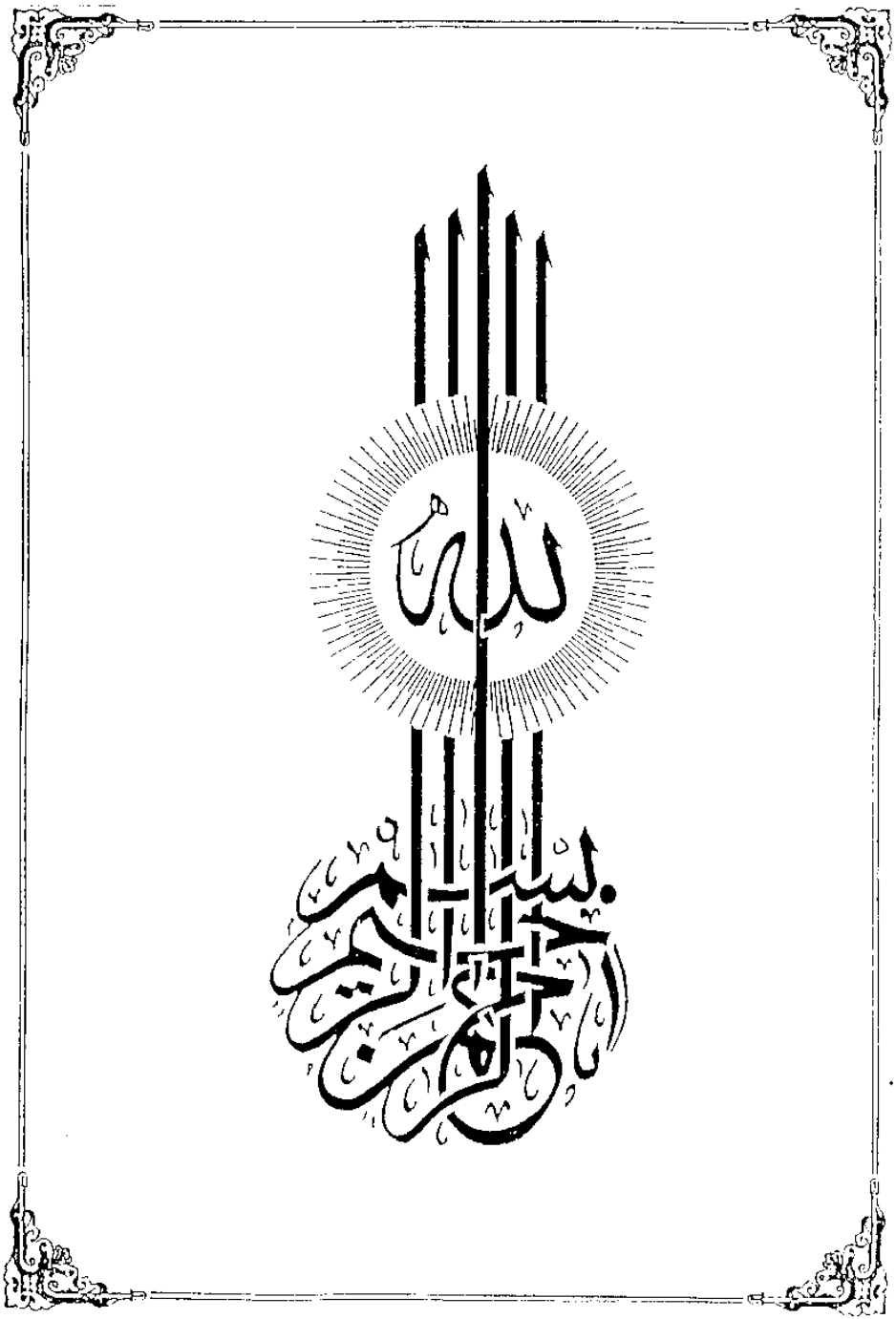

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LIST OF ABBREVIATIONS

b	Basement membrane
b.L	Basal lamina
C	Cytoplasm
C.T.	Connective tissue
C.V	Cytoplasmic vacules
d	Dark cell
D	Desmosomal junctions
de	Dense bodies
F	Fat globules
f	Foot processes
F1	Dissolving fat globules
F2	Dissolved fat globules
G	Glycogen granules
hd	Hemi desmosomes
	Interdigitation
L.d	Lamina densa
L.r	Lamina rara
m	Mitochondria
N	Nucleus
Ni	Nucleoli
Nm	Nuclear membrane
P	Pale cell
P.N	Pknotic nuclei
P.V	Peri nuclear vacules
PR	Projections
R.B.C	Red blood corpuscle
R.E.R	Rough endoplasmic reticulum
S	Intercellular space
t	Tono filaments
	Terminalblebs
v	Microvilli
V.	Membrane bound vacules

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LIST OF ABBREVIATIONS

Magnification power of electron micrographs

x 4.5 = 4500

x 7 = 7.000

x 10 = 10.000

x 15 = 15,000

x 20 = 20,000

x 30 = 30,000

x 45 = 45,000

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LIST OF FIGURES

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INTRODUCTION

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INTRODUCTION

The human fetal membrane (amnion and chorion laeve) are beleived to play a vital role in the maintenance of the intrautrine integrity during gestation.

The amnion is also known to liberate arachidonic acid and synthesize prostaglandin E2 which is involved in initiation of labor.

The microanatomy of human fetal membrane has been studied previously by a number of investigators (Danforth, 1958; Bourne, 1960; Armstrong, 1968; Van Herendael, 1978 and King 1985).

It has been notced that the amnion epithelial cells are heterogeneous with respect to light microscopic appearance; there are both "light and dark" stained cells with hematoxlin and eosin (Aplin et al., 1985).

Transmission electron microscopy was used to assess the influence of normal active labour on the ultra-structure of the human amnion epithelial membrane.

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AIM OF WORK

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AIM OF THE WORK

To determine wether the process of normal active labor influences the ultra structural features of the human amnion epithelium.

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REVIEW OF LITERATURE

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DEVELOPMENT OF AMNION

At eighth day of development the blastocyst is partially embedded in the endometrial stroma. The cells of the inner cell mass or embryoblast differentiate into two layers: a layer of small cuboidal cells known as the hypoplast layer and a layer of high columnar cells the epiblast layer together they are known as the bilaminar germ disc.

The germ layers extend beyond the region in which the embryo itself develops these peripheral portions of the germ layers give rise to the fetal membranes.

Fetal membranes:

These are structures that have developed from the zygot but do not form part of the embryo, they are called extra embryonic membranes. They may be regarded as auxiliary organs that assist in the protection of the embryo and provide for its respiration nourishment, and excretion.

They include the yolk sac, allantois, amnion, and chorion.

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Amnion arises as a layer of somatopleure. This membrane forms the wall of the amniotic cavity which appears within the epiblast and is attached to the periphery of the embryonic disc which serves as a floor to the amniotic cavity.

The amnion is thin, tough, transparent non vascular membrane formed of ectoderm on the inside and extra embryonic mesoderm on the out side.

As the embryo develops: At the head region of the embryo a fold of combined ectoderm and mesoderm begins to move back over the surface of the embryo, this comprises the head fold of the amnion.

Somewhat later a simillar fold appears posterior to the embryo, the tail fold of the amnion.

These folds approximate each other and finally fuse together, while the head fold and the tail fold are developing, lateral folds of the amnion appear. These extend both above and below the embryo, with the result that the embryo is completely enveloped in a sac: the amnion.

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At the end of third month, the amnion has expanded to such an extent that it comes in contact with the chorion, there by obliterating the chorionic cavity (Barth, 1966; Snell, R. 1975 and Sadler T.W. 1985).

Aminotic fluid:

It has been shown (Vosburg et al., 1948; Plentl et al., 1955; Hutchinson et al., 1955; Paul et al., 1956 and Neslen et al., 1954), that the amniotic fluid is by no means static but rather is in dynamic equilibrium and a constant state of change with maternal system.

In the human being, the turn over of water is from 350 to 600 cc per hour (Plentl et al., 1955).

Although the exchange of water is said to occur by simple diffusion, (Paul et al., 1956) a characteristic differential in the transfer rate of certain tagged substances (Neslen et al., 1954) the demonstration by Wirtschafter et al., (1957), of significant differences in protein fractions between amniotic fluid and maternal serum in the rate suggested that the exchange process is neither by transudation nor by the ultrafilteration of plasma. They stated that the fetal membranes and perhaps more specifically the amnion are directly concerned in these selective

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