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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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STUDY OF THE SECOND AND THIRD TRIMESTER OLIGOHYDRAMNIOS IN TANTA UNIVERSITY HOSPITAL AND THE EFFECT OF DIFFERENT MATERNAL HYDRATION METHODS

THESIS

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contents

Subject	Page
I- Introduction	1
II- Review of literature	3
◙ Embryology And Histology Of Fetal amnion.	3
◙ Physiology of amniotic fluid .	6
◙ Biochemistry of amniotic fluid	14
◙ Assessment of amniotic fluid volume	18
◙ Oligohydramnios.	23
III- Aim of the work	47
IV- Patients and Methods	48
V- Results	57
VI - Discussion	88
VII- Summary and conclusion	97
VIII–References	102
Arabic summary	

List of Abbreviations

AF	Amniotic fluid
AFI	Amniotic fluid index
AFV	Amniotic fluid volume
CNS	Central nervous system
CVS	Cardiovascular system
HB	Hemoglobin concentration
HDUFR	Hourly fetal urine flow rate
IUGR	Intrauterine growth restriction
MHz	Mega hertz
MVP	Maximum vertical pocket
PROM	Premature rupture of membranes
QAFV	Qualitative classification of amniotic fluid volume
SD	Standard deviation
US	Ultrasonography
USG	Urine specific gravity

Lists of tables

Tables	List	Page
Table (1)	The statistical Analysis of the mean values ± SD of the maternal age in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water)	65
Table (2)	The statistical Analysis of the mean values ± SD of the Gestational age in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water) using ANOVA test.	66
Table (3)	The statistical Analysis of the distribution of cases according to gravidity in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water)	67
Table (4)	The statistical Analysis of the mean values ± SD of the Amniotic Fluid Index (AFI) before and after the treatment in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water)	68
Table (5)	The statistical Analysis of the mean values ± SD of the Hemoglobin concentration (Hb) before and after the treatment in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water)	69
Table (6)	The statistical Analysis of the mean values ± SD of the Urine Specific Gravity(USG) before and after the treatment in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water)	70
Table (7)	The statistical Analysis of the mode of delivery either Normal Vaginal Delivery (N.V.D.) or ceserian section (S.C.)in all groups(group 1:hypotonic saline, group 2:isotonic saline ,group 3:water+minirine spray ,group 4:water)	71
Table (8)	The statistical Analysis of Apgar score of the baby 1 min and 5 min. after delivery in all groups	72
Table (9)	The statistical Analysis of the mean values ± SD of the Amniotic Fluid Index (AFI) before and after the treatment in all groups in the third trimester (≥28 weeks)	73
Table (10)	The statistical Analysis of the mean values ± SD of the Amniotic Fluid Index (AFI) before and after the treatment in all groups in the second trimester (<28 weeks)	74

Table (11)	The statistical Analysis of Apgar score of the baby 1min. after delivery whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	75
Table (12)	The statistical Analysis of Apgar score of the baby 5min. after delivery whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks)	76
Table (13)	The statistical Analysis of the mean values ± SD of the gestational age at delivery in all groups; whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	77
Table (14)	The statistical analysis of the neonatal outcome in all groups whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	78
Table (15)	The correlation between the effect of different lines of treatment on the AFI and gestational age at delivery, Apgar at 1min.and 5 min. after delivery whether in the second trimester (<28 weeks) or in the third trimester cases (≥28 weeks)	79

Lists of figures

Figures	List	Page
Fig (1)	Graphic representation of the mean values ± SD of maternal age in all groups.	65
Fig (2)	Graphic representation of the mean values ± SD of Gestational age in weeks in all groups.	66
Fig. (3)	Graphic representation of the distribution of cases according to Gravidity in all groups.	67
Fig. (4)	Graphic representation of the mean values ± SD of the Amniotic Fluid Index (AFI) before and after the treatment in all groups.	68
Fig. (5)	Graphic representation of the mean values ± SD of the Hemoglobin concentration (Hb) before and after the treatment in all groups.	69
Fig. (6)	Graphic representation of the mean values ± SD of the the Urine Specific Gravity(USG) before and after the treatment in all groups.	70
Fig. (7)	Graphic representation of the mode of delivery either Normal Vaginal Delivery (N.V.D.) or ceserian section (S.C.)in all groups	71
Fig. (8)	Graphic representation of Apgar score of the baby 1 min. and 5 min. after delivery in all groups.	72
Fig (9)	Graphic representation of the mean values ± SD of the Amniotic Fluid Index (AFI) before and after the treatment in all groups in the third trimester (≥28 weeks) .	73
Fig (10)	Graphic representation of the mean values ± SD of the Amniotic Fluid Index (AFI) before and after the treatment in all groups in the second trimester (<28 weeks).	74
Fig (11)	Graphic representation of Apgar score of the baby 1 min. after delivery whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	75
Fig (12)	Graphic representation of Apgar score of the baby 5 min. after delivery whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	76
Fig (13)	Graphic representation of the mean values ± SD of the gestational age at delivery in all groups; whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	77
Fig (14)	Graphic representation of the mean values ± SD of the gestational age at delivery in all groups; whether in the second trimester (<28weeks) or in the third trimester (≥28 weeks) cases.	78
Fig (A)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother(with 2nd trimester oligohydramnios) with 2L/2h of hypotonic saline.	80
Fig (B)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with 2nd trimester oligohydramnios) with 2L/2h of . hypotonic	80

	saline.	
Fig (C)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother(with 3 rd trimester oligohydramnios) with 2L/2h of hypotonic saline	81
Fig (D)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with 3 rd trimester oligohydramnios) with 2L/2h of hypotonic saline	81
Fig (E)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother(with 2nd trimester oligohydramnios) with 2L/2h of isotonic saline .	82
Fig (F)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with 2nd trimester oligohydramnios) with 2L/2h of isotonic saline	82
Fig (G)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother(with 3rd trimester oligohydramnios) with 2L/2h of isotonic saline .	83
Fig (H)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with 3rd trimester oligohydramnios) with 2L/2h of isotonic saline .	83
Fig (I)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother(with 2nd trimester oligohydramnios) with 2L/2h of oral water + one time desmopressine acetate nasal spray	84
Fig (J)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with 2nd trimester oligohydramnios) with 2L/2h of oral water + one time desmopressine acetate nasal spray.	84
Fig (K)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother(with3rd trimester oligohydramnios) with 2L/2h of oral water + one time desmopressine acetate nasal spray	85
Fig (L)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with3rd trimester oligohydramnios) with 2L/2h of oral water + one time desmopressine acetate nasal spray	85
Fig (M)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother (with 2^{nd} trimester oligohydramnios) with 2L/2h of oral water .	86
Fig (N)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother(with 2^{nd} trimester oligohydramnios) with 2L/2h of oral water	86
Fig (O)	An ultrasound show the diameter of the maximum vertical pocket (MVP) before hydration of the mother (with 3rd trimester oligohydramnios) with 2L/2h of oral water	87
Fig (P)	An ultrasound show the diameter of the maximum vertical pocket (MVP) after hydration of the mother (with 3rd trimester oligohydramnios) with 2L/2h of oral water	87

Introduction

Amniotic fluid is a clear fluid which surround the fetus during intrauterine development.This fluid provides several important benefits to the fetus in that, it protects the fetus against trauma, has antibacterial properties and function as a reservoir that may provide a short term source of nutrients to the fetus. In addition, moderate amounts of amniotic fluid are required for the normal development of the fetal musculoskeletal system, for gastrointestinal system development and for the fetal lungs to develop and mature as needed in preparation for the breathing of air that must commence abruptly, at birth. (Brace RA 1997)

Although there are multiple pathways for amniotic fluid to enter and leave the amniotic space, there are only two primary sources and two primary routes of clearance of amniotic fluid during the latter half of gestation. The two primary sources of amniotic fluid are fetal urine and lung liquid, with an additional small contribution from secretions of the fetal oral-nasal cavities. The two primary routes of amniotic fluid removal are fetal swallowing and absorption into the fetal blood perfusing the fetal surface of the placenta. (Moore KL 1988)

Oligohydraminos in presence of intact membranes is a common obstetric complication, occurring in 3% to 5% of pregnancies at term. Such pregnancies are at increased risk of fetal distress and are associated with high rate of operative delivery and meconium aspiration.(Flack NJ and Fisk NM 1993)

Perinatal mortality was increased 13 folds when amniotic fluid volume was sonographically marginal and increased 47 fold if severe oligophydramonis was present.(Moore TR 1997)

Clinical trials have shown that, correction of oligohydramnios by intrapartum amnioinfusion reduces the incidence of its complications. (Hofmeyer GJ 2001) However, this technique has several limitations. It can only be instituted during labour in presence of ruptured membranes, it requires an indwelling catheter and frequent monitoring , and as with any invasive procedure, it is not without risk. (Lameier LN and Katz VL 1993)

Simple maternal hydration has been suggested as a noninvasive way of increasing amniotic volume in women with oligohydramnios in order to reduce some of its problems. (Strong TH 1993)

Goodlin et al, reported a correlation between measured maternal intravascular volume and amniotic fluid volume as, with cases of oligohydramnios, the maternal plasma volume was found to be decreased from normal and it is assumed that this condition was improved with maternal oral or intravenous hydration. . (Goodlin RC et al 1983)

Doi et al, reported that maternal osmotic changes rather than maternal volume expansion had a more direct impact on increasing amniotic fluid volume with short-term acute hydration. (Doi S et al 1998)

Embryology and histology of fetal amnion

Early in the process of implantation, small cells appear in the inner surface of trophoplast called the aminogenic cells and they form the precursors of amniotic epithelium. The human amnion is first identifiable about the seventh or eighth day of embryonic development. Initially, the amnion develops into a small sac that covers the dorsal surface of the embryo or inner cell mass. As the amnion enlarges, it gradually encircles the growing embryo, which prolapses into the cavity.(Benirschke K and Kaufman P 2000)

The amnion is divided into a reflected part which is fused to the chorion leave, placental part which covers the fetal surface of placenta, and thereby is in contact with adventitial surface of the chorionic vessels which traverse the chorionic plate and branch into the cotyledons and umbilical part which covers the umbilical cord.(Cunningham FG, Gant NF, Leveno KJ, et al 2001)

The amnion tissue consists of five separate layers. The inner surface, which is bathed by amniotic fluid, is an uninterrupted single layer of cuboidal epithelial cells, believed to be derived from embryonic ectoderm. This epithelium is attached firmly to a distinct basement membrane overlying another cellular compact layer, which is composed partiality of interstitial collagens III and V. On the outerside of the compact layer, there is a row of fibroblast-like mesenchymal cells (which widely dispersed at term). These cells are probably derived from mesoderm of the embryonic