RESEARCH PAPER

Postdate Pregnancy: Maternal & Neonatal Outcome

Methal A. Alrubaee,[1] Wafaa S. Almaliki,[2] Saba A. Almahdi,[3]

1. MBChB, C.A.B.O.G., D.O.G., Assistant Professor, Department of Gynecology & Obstetric, College of Medicine, University of Basrah, Iraq
2. MBChB, C.A.B.O.G.
3. MBChB

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Abstract

Background: Postdate pregnancy is pregnancy last longer than estimated date of confinement which is known as due date. Postdate pregnancy can be considered as high-risk factor from the point of increasing maternal & neonatal morbidity & mortality. Aim: to identify whether the pregnancy beyond the expected date of delivery has negative effects on the health of mother & neonate.

Study design: This is a prospective case-control study done from (1st Jan. 2020-1st Jan.2021). It includes (600) pregnant women admitted with spontaneous labor or for induction of labor. They were divided into (350) pregnant women as control with gestational age (37 weeks completed -40 weeks) & (250) pregnant women as cases with gestational age (beyond 40 weeks - 42 weeks completed). Estimation of the gestational age based on the last menstrual period & early first trimester ultrasound.

Results: Those with postdate pregnancy were mainly of young age group (62.4%) & multiparous (55.6%). Induction of labor done in (46.4%). Cesarean section rate was (22.4%) mainly for fetal distress (66%). Postpartum hemorrhage consequent to uterine atony was the main maternal complication (16.4%). The newborns had favorable outcome with Apgar score (i. e ≥7) in (77.6%). They were macrosomic (19.2%). Male gender was the predominant sex (68.4%). Meconium-stained liquor affect (23.2%); (12.4%) had meconium aspiration syndrome & (18.8%) admitted to intensive care unit.

Conclusion: Postdate pregnancy negatively affect both maternal & neonatal health by increasing postpartum hemorrhage & cesarean section rate as well as neonatal macrosomia, meconium staining & aspiration.

Keywords: Postdate Pregnancy, Outcome

Correspondence to: Methal A. Alrubaee, Assistant Professor, Department of family & community medicine, College of Medicine, University of Basrah, Iraq

E-mail: Methalrubaie@gmail.com

Introduction

Postdate pregnancy is usually defined as "pregnancy lasting more than 280 days or completed 40 weeks after the first day of last menstrual period".[1] In order to accurately determine the natural incidence of prolonged pregnancy there must: Early pregnancy dating by last menstrual period & 1st trimester ultrasound estimation of crown rump length (CRL), universal follow up of all pregnancies & absence of obstetric intervention.[2] The incidence of postdates decrease as the accuracy of dating criteria used increase. The reported incidence of postdate pregnancy range from (3-17%).[3] Primigravida, previous postdate pregnancy, low socio-economic status; maternal obesity & smoking are associated with higher incidence of prolonged pregnancy.[4] Recent data have also

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shown an association of prolonged pregnancy & male fetuses.[4] The most common cause is inaccurate dating.[5] other causes are unknown and are properly associated with biochemical & physiological mechanisms responsible for the initiation of labor.[6] Rarely but classically described causes of prolonged pregnancy include: Placental sulphatase deficiency, fetal adrenal hypoplasia. & fetal anencephaly.[7] The genetic factors may play a role in prolongation of pregnancy. In one study; women who were the product of pregnancy beyond (40 weeks) or more were more likely themselves to have pregnancy beyond (40 weeks).[8] Maternal risks are labor dystocia with consequent obstructed labor, shoulder dystocia due to high risk of macrosomic fetus, sever perianal injury, cervical tear, postpartum hemorrhage, puerperal infection, raising the rate of emergency cesarean section to double & psychological complications. [9] Fetal & neonatal risks are increased risk of stillbirth & neonatal death as well as increase in the risk of death in the first year of life, intra-uterine growth retardation, meconium aspiration syndrome, intrapartum asphyxia, neonatal acidemia with low umbilical artery pH level at delivery, macrosomia with consequent birth injury such as brachial plexus injury, cerebral palsy & bone fractures, low 5 minute Apgar score, peripheral nerve paralysis, neonatal seizures, neonatal encephalopathy, neonatal pneumonia, neonatal septicemia, intrapartum fetal distress .[10]

Patients & Method

This is a prospective case-control study had been carried out at Basra Maternity & Child Hospital from [1st of Jan. 2020 till 1stJan. 2021]. It includes (600) pregnant women admitted to labor room either with spontaneous onset of labor or for induction during the same study period. The studied women were divided into:

1. Case group (250): Those with gestational age beyond (40 weeks till 42 weeks completed).

2. Control group (350): Those with gestational age between (37 weeks completed - 40 weeks completed).

Inclusion criteria:

Antepartum cases whose gestational age range between (37 weeks completed - 42 weeks completed), they have regular menstrual cycles & known last menstrual period or with early first trimester scan & singleton pregnancy with vertex presentation.

Exclusion criteria:

Congenital anomalies, chronic hypertension or pre-eclampsia, preexisting or gestational diabetes, heart disease or chronic respiratory disease & antepartum hemorrhage. The data are collected using a prepared printed formula meeting the objectives of this study by means of a personal interview with the patients. The data include patient's age, parity, gestational age either between 37weeks to 40 weeks or > 40 weeks gestation, the onset of labor (either spontaneous onset or induced regarding the case group while all control group were spontaneous), mode of delivery, maternal obstetrical complications, birth weight of newborn alive or dead, sex, Apgar score within 5 minutes& the complications that affect the health of the newborn & the admission to neonatal intensive care unit.

Z-test is used to estimate P value for the significance of difference.

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Results

Table 1. Demographic distribution of both case & control groups

Distribution	Case group		Control group		P Value
	No.	%	No.	%	
1. Age in years:					
<18 years	49	19.6	71	20.3	NS
18 -30 years	156	62.4	197	56.3	NS
>30 years	45	18	82	23.4	NS
Total:	250	-	350	-	-
2. Parity:					
Primigravida	84	33.6	111	31.7	NS
1-4	139	55.6	203	58	NS
≥5	27	10.8	36	10.3	NS
Total	250	100	350	100	-

NS (not significant) =P value > 0.05, SIG (significant) = P value < 0.05, HS (highly significant) = P value < 0.01.

The majority of both case & control groups belonged to the age (18 -30 years); (62.4%, 56.3 %) respectively as shown in this table with no significant difference (P = > 0.05). The same is true regarding parity where the majority of both groups were multiparous (1-4); (55.6%, 58%) respectively, with no significant difference. Primigravida with postdate pregnancy constitute (33.6 %) only.

Table 2. Distribution of case group according to onset of labor.

Onset of labor	No.	%
Spontaneous	134	53.6
Induced	116	46.4
a. EAC+ Oxytocin	107	92.2
b. Oxytocin + Amniotomy	9	7.8
Total	**250**	**100**

More than half of patients with postdate pregnancies presented with spontaneous onset of labor (54%) as shown in the table above, while (46.4%) need induction of labor from whom (92.2%) induced by extra-amniotic catheter (EAC)+ oxytocin (i.e. they have unfavorable cervix).

Table 3. Mode of delivery

Mode of delivery	Case group		Control group		P Value
	No.	%	No.	%	
1. VD	193	77.2	321	91.7	HS
2. LSCS	56	22.4	29	8.3	HS
3. Instrumental	1	0.4	0	0	NS
Total	250	100	350	100	-

VD (vaginal delivery), LSCS (lower segment cesarean section)

This table shows that about (92%) of the control group had vaginal delivery compared to (77.2%) in the case group with highly significant difference (p = < 0.01). The rate of C/S was (22.4%) in the case group higher than its rate in the control group (8.3%) with highly significant difference.

Table 4. Indications for Cesarean Section

Indications	Case group		Control group		P-Value
	No.		No.	%	
1. Fetal distress	37	66.1	8	27.6	HS
2. Failure to progress	19	33.9	21	72.4	HS
Total	**56**	**-**	**29**	**-**	**-**

Fetal distress was the main indication of cesarean section in the case group (66%) compared to (27.5%) in the control group, while failure to progress is more frequent in the control group (72.4%) compared to only (34%) in the case group with highly significant difference.

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Table 5. Maternal complications

Complications	Case group		Control group		P Value
	No.	%	No.	%	
1.Postpartum hemorrhage					
a. Uterine atony	41	16.4	9	2.6	HS
b. Perineal tear	13	5.2	4	1.1	HS
c. Cervical tear	4	1.6	1	0.3	NS
2. Prolonged labor	38	15.2	7	2	HS
3. Shoulder dystocia	4	1.6	2	0.6	NS

Table (6) represents the maternal complications in which postpartum hemorrhage is the major complication mainly due to uterine atony (16.4%), followed by perineal tear (5.2%) then prolonged labor (15.2%) with highly significant difference when compared to the control

Table 6. Neonatal outcome

Outcome	Case group		Control group		P-Value
	No.	%	No.	%	
1. B.W. :					
2500_3500 g	73	29.2	283	80.9	HS
> 3500_4000 g	129	51.6	59	16.9	HS
> 4000 g	48	19.2	8	2.2	HS
2. Apgar Score in 5 minutes:					
< 7	56	22.4	7	2	HS
≥ 7	194	77.6	343	98	HS
3. Sex of baby:					
Male	171	68.4	104	29.7	HS
Female	79	31.6	246	70.3	HS
4. Meconium-stained liquor	58	23.2	6	1.7	HS
5.Meconium aspiration syndrome	31	12.4	1	0.3	HS
6. Admission to NICU	47	18.8	14	4	HS
7. Birth asphyxia	3	1.2	2	0.6	NS

The newborns of the case group tend to be heavier in their B.W. where (19.2%) are macrocosmic compared to only (2.2%) in the control with highly significant difference. About (98%) of the newborns of the control group had been delivered in favorable condition with Apgar score equal or more than (7) compared to (77.6%) of the case group with highly significant difference. Male gender was predominant in (68.4%) of the case group versus (29.7%) in the control with highly significant difference. Meconium-stained liquor affect (23.2%) of the cases compared to only (1.7%) of the control so that meconium aspiration syndrome was the complication in (12.4%) of the cases while only (1.3%) of the control had such complication with highly significance & (18.8%) of the postdate newborns were admitted to neonatal intensive care unit versus (4%) of the control with highly significant difference.

Discussion

Postdate pregnancy tend to be increasing nowadays in our community consequent to poor dating & lack of adequate antenatal care. In this study, the majority of both case & control groups were belong to (18-30 years) of age; (62.4% & 56.3%) respectively. This is in agreement with the results obtained by other study (83.4% & 82.2%) respectively.[11]Although primigravida had been considered as a risk factor for postdate pregnancy [4] but in our study; the majority were multigravida in both case & control groups (55.6% & 58%) while primigravida constituted only (33.6% & 31.7%) respectively. This is similar to other study (51.2% & 67.3%) for multigravida while primigravida were (48.7%& 32.9%) for the postdate pregnancies and term pregnancies consecutively.[11] Induction of labor was done in (46.4%) of postdated group; from which

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(92.2%) need ripening of the cervix using mechanical method (i.e. EAC) as the Bishop score was (≤ 6). This is the same to the result of other study where (57.1%) of postdate pregnancies need ripening of the cervix. [12] The rate of lower segment cesarean section among postdate group of our study was (22.4 % versus 8.3%) for the control. This is in agreement with the result of other (40.5% versus 34.1%) [11] but another study found that the rate of C/S is almost the same in both groups (48.2% versus 47.6%). [13] This difference can be explained by variation in the sample size & duration of the study. The main indication for cesarean section was fetal distress among the case group (66.1%) followed by failure to progress (33.9%) This was similar to other reports where fetal distress was indicated in (68.5%) of the postdated pregnancies while failure to progress was indicated in (31.4%). [13] Fetal distress seem to be main indication for C/S in postdate pregnancy consequent to placental insufficiency which occur due to atherosclerotic changes so result in hypoxia & acidosis, while prolong labor may occur due to cephalo-pelvic disproportion caused by macrosomia.

The main maternal morbidity that complicates postdate pregnancy was postpartum hemorrhage consequent to uterine atony (16.4%) followed by prolonged labor (15.2%), these were more significant than in the control group. Postpartum hemorrhage occurs due to uterine atonia either because of uterine over distension by macrosmic fetus or due to myometrial exhaustion consequent to prolong labor. This resemble other results where the main maternal complications were the prolonged labor (68.2%) & postpartum hemorrhage (40.9%).[13] The newborns of those with postdate pregnancy tend to be heavier in their birth weight compared to the control group. There was (51.6%) weighing (>3500-4000 g) and (19.2%) were macrosomic similar to other study (46.63% & 13.9%) respectively.[11] Fortunately, most of the postdate newborns delivered in favorable conditions where (77.6%) had Apgar score (≥7); this was in agreement with other study (86.3%). [11] Male gender was predominant among the postdated newborns (68.4%) which confirm the concept that male sex is one of the risk factors for prolonged pregnancy.[4] Meconium-stained liquor was a frequent neonatal complication of the postdate pregnancy (23.2%) higher than in the control group significantly & same to that of other reports (20%),[13] while meconium aspiration syndrome complicates the postdate pregnancy in (12.4%) in our study approximate to that of other reports (19.3%). [11] Meconium staining of liquor occur because of fetal hypoxia consequent to placental insufficiency caused by vascular changes. About (19%) of the newborns of postdate pregnancies were admitted to NICU similar to (19.5%) of other studies. [11] The main indication for admission was meconium aspiration syndrome.

Recommendation,

1. Incidence of postdate pregnancy can be decreased by encouragement for early attendance to antenatal clinics for accurate calculation of the date.
2. Confirmation of diagnosis of exact term of pregnancy is very important as many patients do not have regular menstrual cycles & last menstrual period. Diagnosis can be confirmed by first trimester U/S which is the most important non-invasive method & readily available.
3. Intrapartum fetal monitoring is mandatory for those with postdate pregnancies to decrease the perinatal morbidity & mortality.

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تأخر الحمل ما بعد الاربعين اسبوع على صحة كل من الام وحديث الولادة

خلقية الدراسة: ان تأخر الحمل ما بعد الاربعون اسبوعا هو الحمل الذي يتجاوز فترة الحمل الطبيعية والتي يتم حسابها من آخر دورة شهرية ويعتبر من عوامل الخطورة بسبب زيادة المضاعفات في الام والجنين.

الهدف من الدراسة: هو معرفة اذا كان هناك تأثير سلبي لتأخر الولادة ما بعد الاربعين اسبوع على صحة الام والمولود حديثا.

تصميم الدراسة: لقد اجريت هذه الدراسة (دراسة استعادية للحالات والشواهد) للفترة (١/١٢/٢٠٢٠– ١/١٢/٢٠٢١) حيث اشتملت الدراسة (٦٠٠) حامل ادخلن في حالة ولادة او لغرض اجراء الولادة الاصطناعية وتم تقسيمهم الى مجموعة الحالات (٢٥٠) اللاتي فترة حملهن (أكثر من ٤٠ اسبوع –٤٢ اسبوع كاملة) ومجموعة الشواهد (٣٥٠) اللاتي فترة حملهن (٣٧اسبوع–٤٠اسبوع). تم تحديد فترة الحمل اعتمادا على آخر دورة شهرية مؤكدة وفحص السونار المبكر.

النتائج: كانت اغلبية الحالات ضمن المرحلة العمرية (١٨–٣٠ سنة) بنسبة (٦٢,٤٪) وذوي ولادات متكررة (٥٥,٦٪). أجري تحفيز الولادة في (٤٦,٤٪). كان معدل العمليات القيصرية (٢٢,٤٪) بسبب تعب الجنين بنسبة (٦٦٪) وكان النزف مابعد الولادة بسبب تأخر تقلص الرحم هو أكثر المضاعفات تكرارا (١٦,٤٪). وجد ان (٧٧,٦٪) من حديثي الولادة لمجموعة الحالات في صحة جيدة حيث كان الابكار سكور لديهم سبعة او أكثر و(١٩,٢ ٪) ذوي اوزان أكثر من ٤٠٠٠غرام وان جنس الذكور هو السائد (٦٨,٤٪). من المضاعفات الرئيسية التي طرأت على المولودين حديثا هو تصبغ السائل الامنيوني بالعق (٢٣,٢٪) و(١٢,٤٪) فقط اصيبوا بمتلازمة الشفط العقي و (١٨,٨٪) ادخلوا الى وحدة العناية المركزة للأجنة.

الاستنتاج: ان تأخر الحمل بعد الاربعون اسبوع يؤثر سلبيا على صحة كل من الام بسبب ازدياد الاصابة بالنزف ما بعد الولادة وارتفاع نسبة العمليات القيصرية وعلى صحة الاجنة بسبب الاوزان الثقيلة وتصبغ السائل الامنيوني بالعق ومتلازمة الشفط العقي.

الكلمات المفتاحية: الحمل المتأخر ، النتيجة

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