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Original Research

Assessing the involution of the uterus and uterine cavity in postpartum women using USG

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ABSTRACT

Background: The six-week period known as the puerperium begins with the placenta's delivery and ends when the uterus returns to its prepregnant form after the majority of the changes that happened during pregnancy. The present study was conducted to assess the involution of the uterus and uterine cavity in postpartum women using USG.

Materials & Methods: 58 women who had uncomplicated singleton pregnancies. Transabdominal ultrasonography to measure uterine dimensions was done on day 1, day 3 and day 42 of puerperium using a 3.5-5 MHz curvilinear probe of a portable ALOKA ultrasound machine. Statistical analysis was done with the Statistical Package for Social Sciences (SPSS) software version 20.0. The uterine dimensions were recorded for day 1, day 3 and day 42 of puerperium.

Results: Age group 20-24 years had 7, 25-29 years had 16, 30-34 years had 24 and >35 years had 11 patients. Parity was Primiparous in 18 and Multiparous in 40. Mode of delivery was spontaneous vertex delivery in 35 and caesarean section in 23. Breastfeeding practice was exclusive in 42 and nonexclusive in 16. The difference was significant (P< 0.05). On day 1, day 2 and day 42, the mean longitudinal diameter found to be 14.2±3.2 cm, 12.1±1.9 cm and 8.9±4.6 cm. Anteroposterior diameter was 8.6±4.1 cm, 7.3±3.8 cm and 4.1±1.8 cm. Transverse diameter was 10.7±3.2 cm, 10.3±2.6 cm and 6.5±2.4 cm respectively. The difference was significant (P< 0.05).

Conclusion: According to this study, the uterus and uterine cavity dimensions on days 1, 3, and 42 of puerperium fall within a normal range, and these sizes decrease as the number of days in puerperium increases.

Keywords: puerperium, pregnancy, USG

INTRODUCTION

The six-week period known as the puerperium begins with the placenta's delivery and ends when the uterus returns to its prepregnant form after the majority of the changes that happened during pregnancy. There is a significant maternal danger during this time.[1]The uterus returns to its typical prepregnant state through a physiological process called uterine involution, which occurs after the majority of pregnancy, labor, and delivery alterations have subsided. Maternal fatalities frequently happen both during and after childbirth. Over 60% of maternal deaths worldwide take place during the postpartum phase.[2]

The uterus's progressive shrinkage during involution is caused by a reduction in size rather than a reduction in the quantity of uterine muscles.[3] During the first 14 days after giving birth, it was found that the uterus's size decreased at a pace of 1.25 cm every 24 hours. Clinical examinations and histological investigations conducted throughout the late 19th and early 20th centuries, when maternal death during the puerperium was widespread, have provided the majority of the information on postpartum alterations in the uterus.[4]

Palpation of the fundal height was originally used to measure the involution of the uterus, a key feature of the normal puerperium.[5] However, this method can be inaccurate in obese and uterine myoma-affected women. During puerperium, this approach has been associated with higher rates of morbidity and mortality.[6,7] Due to its affordability, accessibility, non-ionizing radiation use, and usefulness, particularly in tracking the development of uterine involution and examining the various causes of puerperal complications, ultrasound has emerged as the first imaging modality and the gold standard for assessing a normal puerperium.[8] The present study was conducted to assess the involution of the uterus and uterine cavity in postpartum women using USG.

MATERIALS & METHODS

The study was carried out on 58 women who had uncomplicated singleton pregnancies. All gave their written consent to participate in the study.

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Data such as name, age, etc. was recorded. Transabdominal ultrasonography to measure uterine dimensions was done on day 1, day 3 and day 42 of puerperium using a 3.5-5 MHz curvilinear probe of a portable ALOKA ultrasound machine. Statistical analysis was done with the Statistical Package for Social Sciences (SPSS) software version 20.0. The uterine dimensions were recorded for day 1, day 3 and day 42 of puerperium. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table: I Socio-demographic characteristics

Parameters	Variables	Number	P value
Age group (years)	20-24	7	0.05
	25-29	16	
	30-34	24	
	>35	11	
Parity	Primiparous	18	0.01
	Multiparous	40	
Mode of delivery	Spontaneous vertex delivery	35	0.02
	Caesarean section	23	
Breastfeeding practice	Exclusive	42	0.01
	Nonexclusive	16	

Table I, graph I shows that age group 20-24 years had 7, 25-29 years had 16, 30-34 years had 24 and >35 years had 11 patients. Parity was Primiparous in 18 and Multiparous in 40. Mode of delivery was spontaneous vertex delivery in 35 and caesarean section in 23. Breastfeeding practice was exclusive in 42 and nonexclusive in 16. The difference was significant (P< 0.05).

Graph: I Socio-demographic characteristics

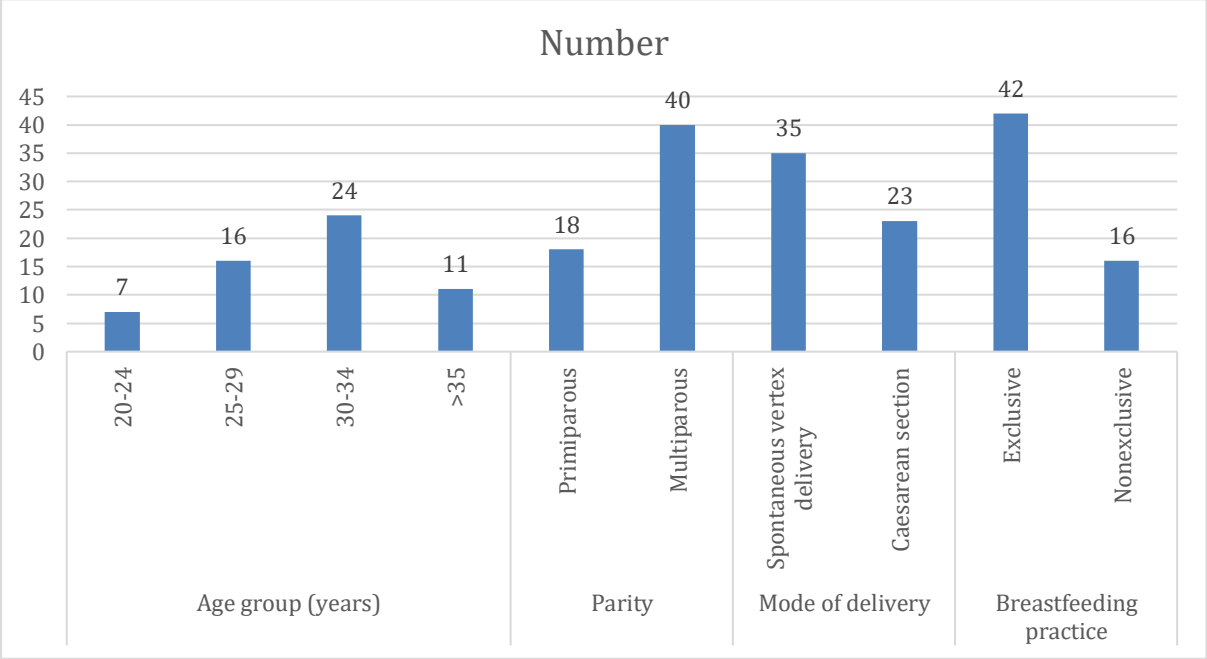

Table II Uterine diameters (uterus) at different days of puerperium

Uterine measurements (cm)	Day 1	Day 3	Day 42	P value
Longitudinal diameter	14.2±3.2	12.1±1.9	8.9±4.6	0.05
Anteroposterior diameter	8.6±4.1	7.3±3.8	4.1±1.8	0.04
Transverse diameter	10.7±3.2	10.3±2.6	6.5±2.4	0.05

Table II shows that on day 1, day 3 and day 42, the mean longitudinal diameter found to be 14.2±3.2 cm, 12.1±1.9 cm and 8.9±4.6 cm. Anteroposterior diameter was 8.6±4.1 cm, 7.3±3.8 cm and 4.1±1.8 cm. Transverse diameter was 10.7±3.2 cm, 10.3±2.6 cm and 6.5±2.4 cm respectively. The difference was significant (P< 0.05).

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DISCUSSION

The first week of puerperium is when the uterus involutes the fastest.[9] The placental location does not fully regenerate until five to six weeks after delivery, but the endometrium does by the third week.[10,11] The present study was conducted to assess the involution of the uterus and uterine cavity in postpartum women using USG.

We found that age group 20-24 years had 7, 25-29 years had 16, 30-34 years had 24 and >35 years had 11 patients. Parity was Primiparous in 18 and Multiparous in 40. Mode of delivery was spontaneous vertex delivery in 35 and caesarean section in 23. Breastfeeding practice was exclusive in 42 and nonexclusive in 16. Okwor et al[12] sonographically evaluated the involution of the uterus and uterine cavity in postpartum women. The mean longitudinal, anteroposterior and transverse diameters of the uterus at day 1 were 14.51 cm, 8.54 cm and 10.97 cm, respectively. The corresponding values for day 42 were 8.27 cm, 4.78 cm, and 6.22 cm. The uterine diameters decreased significantly as puerperium advanced ($p<0.001$). The mean uterine cavity diameters also decreased significantly as puerperium advanced ($p<0.001$). There was significant regression between longitudinal diameters of both uterus and uterine cavity on days 1 and 3 but not between days 3 and 42.

We found that on day 1, day 3 and day 42, the mean longitudinal diameter found to be 14.2±3.2 cm, 12.1±1.9 cm and 8.9±4.6 cm. Anteroposterior diameter was 8.6±4.1 cm, 7.3±3.8 cm and 4.1±1.8 cm. Transverse diameter was 10.7±3.2 cm, 10.3±2.6 cm and 6.5±2.4 cm respectively. Mulic-Lutvica et al[13] described uterine and uterine cavity changes throughout the puerperium, as revealed by ultrasound. 42 women with uncomplicated vaginal term deliveries were examined serially by ultrasound on postpartum days 1, 3, 7, 14, 28 and 56. The first four examinations were performed transabdominally and the last two transvaginally. The involution process of the uterus was assessed by measuring the anteroposterior diameter of the uterus and uterine cavity. Morphological findings were recorded. The influence on the involution process of parity, breast-feeding, maternal smoking and infant's birth weight were also evaluated. The maximum anteroposterior diameter of the uterus diminished substantially and progressively from 92.0 mm on day 1 postpartum to 38.9 mm on day 56. The maximum anteroposterior diameter of the uterine cavity diminished from 15.8 mm on day 1 to 4.0 mm on day 56. However, the anteroposterior diameter of the uterine cavity, 5 cm from the fundus, typically increased on days 7 and 14 postpartum. The position of the uterus and the shape and the appearance of the cavity change in a unique way during the normal puerperium. The uterus was most often retroverted and empty in the early puerperium. Fluid and debris in the whole cavity were seen in the middle part of the puerperium. In late puerperium the cavity was empty and appeared as a thin white line. Endometrial gas was occasionally visualized. No correlation was found between the involution of the uterus and parity, breast-feeding and the infant's birth weight.

The shortcoming of the study is small sample size.

CONCLUSION

According to this study, the uterus and uterine cavity dimensions on days 1, 3, and 42 of puerperium fall within a normal range, and these sizes decrease as the number of days in puerperium increases.

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