Conference Paper

The Accuracy of the Weight of the Fetal Agency Using Ultrasound Based on the Formula Hadlock Compared to the Birth of New Body Weight

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Abstract

The purpose of this study is to analyze the result of the calculation of fetal weight estimation based on Hadlock's formula with baby birth weight. The design of this research is quantitative analytic. The data is analyzed by the *t*-test. The results of this study showed that the analysis of the average comparison between TBJ (Fetal Weight Estimation) and BBL (Fetal Birth Weight) is 2623,60 with 2946,67. There is a significant difference with the value of sig.(2-tailed) 0,000 <0,05, which means there is a significant difference between the estimated fetal weight based on Hadlock's formula with baby birth weight. Based on the result of the study of fetal weight interpretation using Hadlock's formula, an accuracy of 89,34% was seen.

Keywords: Ultrasonografi, Formula Hadlock, taksiranberatjanin, beratbayilahir

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1. Background

From year to year Ultrasonography (USG) is growing rapidly, in line with technological advances that are applied to the medical world, especially in the imaging field (1).

Ultrasound has been carried out in the obstetric field for a long time. Ultrasound is an examination technique that is very important for pregnant women and can be done at any time during pregnancy if there are clinical indications (2). Biometry measurements play an important role in determining gestational age, estimated fetal weight, early detection of growth disorders and fetal abnormalities. Basic biometric examinations include Circumference (HC), Abdomen Circumference (AC), and Femur Length (FL) (3–6).

Complication of labor as an obstetric complication is one of the causes of the size factor of the fetus, when it is not treated immediately it will increase maternal and neonatal mortality (7).

Measurement of fetal weight (TBJ) should be done at the end of the second and third trimesters based on the comparison of Abdomen Circumference (AC) with Bi Parietal Diameter (BPD) and Femur Length (FL) (3).

2. The Objective

The purpose of this study was to analyze the results of the calculation of fetal body weight based on Hadlock formula with the baby's weight after birth.

3. Methods

This study was conducted at the Babylon I Health Center. Using the Ultrasound GE LOGIQ V5 Expert, with a height of 52.91 inch, width 17.9 inch, weight 43 kg, 15 "LCD monitor display. Using a 3.5-5 MHz frequency transducer. Using a non-random sampling technique as many as 30 samples consisting of pregnant women at 36-40 weeks, pregnant women aged 20-35 years and pregnant women do not have pathophysiological abnormalities. Data processing is done using Statistical Software Program. Data analysis was carried out through the Paired Sample T-Test.

When examining the patient must be in a condition that is ready for examination. The examination will cover a few centimeters from the pubic area and will widen at the top to allow the uterine fundus to be visualized. A tissue is needed to tuck into the top of her underwear and the top of her clothes. Most transabdominal examinations are performed with the position of the supine patient with the position of the head lifted up (8.9).

4. Results

The characteristics of the research sample are as follows:

The results of statistical analysis that show the difference between TBJ (Fetal Weight Estimation) and BBL (Infant Weight)

5. Discussion

The characteristics of the research sample from the SPSS output calculation, it is known that the number of N samples is 30, consisting of 4 variables, namely age of mother, age

Table 1: Characteristic of Respondents.

Characteristic	Total (N = 30)	%
Mothers'sage :		
<25 th	8	26,6
25-30 th	9	30
>30 th	13	43,4
Gestational age :		
<37 mgg	8	26,7
37-39 mgg	18	60
>39 mgg	4	13,3
TBJ/estimated fetal weight:		
<2500 gr	12	39,6
2500-4000 gr	18	60,4
>4000 gr	-	-
BBL/birth weight :		
<2500 gr	5	16,7
2500-4000 gr	25	83,3
>4000 gr	-	-

Table 2: Paired Samples Statistics.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	TBJ	2632,60	30	513,025	93,665
	BBL	2946,67	30	471,047	86,001

Table 3: Paired Sample Test.

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	TBJ – BBL	-314,067	195,289	35,655	-386,989	-241,145	-8,809	29	,000

of pregnancy, TBJ (Estimation of Fetal Weight) and BBL (Weight of Infant Birth). What is then calculated is the percentage value of each variable (table 1).

From the analysis results for maternal age variables showed results, mothers with age <25 years were 26.6% while mothers with age 25-30 years were 30% and mothers with age> 30 years were 43.4%. Mother's age is closely related to baby's weight. Pregnancies under the age of 20 are high-risk pregnancies, 2-4 times higher than pregnancies in women of sufficient age. Although underage pregnancies are very risky, pregnancy

over 35 years is not recommended. In the process of childbirth, pregnancies over the age of 35 years will face difficulties due to weak uterine contractions and frequent abnormalities in the middle pelvic bone. Given that age factors play an important role in the health and well-being of pregnant women and infants, it is recommended that pregnancy planning be carried out between the ages of 20-30 years.

For gestational age variables, the results of mothers with <37 weeks gestational age were 26.7% while those of 37-39 weeks gestational age were 60% and mothers with gestational age> 39 weeks were 13.3%.

For the TBJ variable (Fetal Weight Estimation) showed estimated results with a weight of <2500 grams as much as 39.6% while those who had an estimated 2500-4000 grams as much as 60.4% and no estimate> 4000 grams. Estimated birth weight babies are categorized as normal or 2500-4000 grams. If the fetal weight is <2500 grams, then it is likely that a low birth weight will occur.

For the BBL variable (weight of the baby born) shows the weight of the baby <2500 grams as much as 16.7% and the baby weight 2500-4000 grams as much as 83.3%. The weight of a newborn is the weight of a baby weighed within 10 minutes after birth. Newborn weight can be divided into: Low Birth Weight if the birth weight is less than 2500 grams regardless of gestational age, Normal Birth Weight if the baby's weight is born between 2500 4000 grams, Large Babies if the baby's birth weight is more than 4000 grams. From this result there is no baby weight> 4000 grams.

Based on the data in table 2, the average value of TBJ (Fetal Weight Estimation) is 2632.60 with a standard deviation of 513.025 and a standard mean error of 93.665. While the average value of BBL (Weight of Birth) is 2946.67 with a standard deviation of 471,047 and a standard mean error of 86,001.

Based on the results of the analysis it is known that the probability value or Sig. (2-tailed) of 0,000 <0,05, there is a significant difference between TBJ (Fetal Weight Estimation) and BBL (Infant Weight). Which means that there is a difference between the estimated weight of the fetus based on the Hadlock 3 formula and the weight of the newborn baby.

In table 3 It is analysis of the comparison of the average between TBJ(Fetal Weight Estimation) and BBL(Infant Weight). The comparison of the average between TBJ and BBL is 2632.60 with 2946.67. Based on the results of the study of the interpretation of fetal weight using the Hadlock 3 formula has an accuracy rate of 89.34%. This result is caused by a lack of accuracy in measuring Circumference, Abdomen Circumference and Femur Length Head so that the results of the calculation of fetal body weight are incorrect.

6. Conclusion

Analysis of the comparison of the mean between TBJ and BBL shows that there is a significant difference between the estimated fetal weight based on the Hadlock formula and the newborn's weight. Based on the results of the study of the interpretation of fetal weight using the Hadlock 3 formula has an accuracy rate of 89.34%.

Care should be taken to carry out the examination by observing the accuracy of the examination of the fetal head circumference, fetal abdominal circumference and the length of the fetal femur.

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