



## NORMAL ULTRASONIC PARAMETERS OF AVARIES OF GIRLS FROM 13 YEARS TILL 23

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### Abstract:

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On 380 ecograms were investigated by us echoparameters of ovaries, which obtained from girls.

The researches showed, that the girls of 13 years till 23 the length of right ovaries in before BMLO menstruation leftside ovulation grows medium to 5,4 mm, left ovaries-to 7,6 mm, in before menstruation BMRO rightside ovulation-properly: to 5,8 and 6,2 mm, frontback size is to 3,2 and 3,6 mm; to 2,7 and 3,6 mm; width-to 3,1 and 3,5 mm; to 3,5 and 2,8 mm and volume to 1,9 and 40 sm; to 1,7 and 1,9 sm.

Ultrasonic dimensions of ovaries on obtained ages during menstrual cycle changes heterochronny and heterodynamically.

**Keywords:** echoparameters, ovulation, ovarium, ultrasonic

It is known that the development of diagnostic technologies at present the study of ovarian echo parameters in adolescence and young adulthood, namely in the period of intensive growth of female genital organs is of increasing practical importance (B.I. Zykin et al., 1997; M.I. Bulanov, V.V. Mitkov, 2005; V. Dogra et al., 2005).

However, it should be noted that the works devoted to ultrasound parameters of ovaries in norm in girls from 13 to 23 years old are not sufficiently covered in the literature (O.V. Syrova, 2005). Therefore, the lack of standard indicators of ovarian echoparameters in the age aspect in girls of reproductive age in the norm is a significant gap in the correct interpretation of the results of the study of female genital organs obtained by echolocation.

The aim of the study was to investigate the normal ultrasound dimensions of ovaries in girls from 13 to 23 years of age.

**MATERIAL AND METHODS.** The material of the study was 385 ecograms obtained during preventive examination in the city and district of Chartak, Namangan region. The studies were conducted in girls with regular 28-29 day menstrual cycle, absence of any changes in ovaries.

To fulfil the set objectives, the ultrasound device 'CHISON' (Korea-USA) was used. At the same time, the studies were carried out by transabdominal echography and standard ovarian echo parameters proposed by V.V. Mitkov (1996) were determined. The obtained digital data were processed by the variation-statistical method (G.F. Lakin, 1980).

The results of the study showed that the length of the right ovary increases 1.23 times (from  $23.6 \pm 0.37$  to  $29.05 \pm 0.14$  mm) and the left ovary 1.35 times (from  $22.3 \pm 0.37$  to  $30.05 \pm 0.26$  mm) before menstruation during left-sided ovulation (BMLO) and before menstruation during right-sided ovulation (BMRO) respectively: 1.2 times (from  $24.05 \pm 0.46$  to  $28.5 \pm 0.4$  mm) and the most intensive growth in length of both ovaries in both menstrual cycles is observed at 14, 19, 20 years of age (Tables. 1,2). It was observed that the maximum size of right ovary is observed by 22 years of age and left ovary by 23 years of age and the least on both sides is observed at 13 years of age. During the age period studied, the width of the right ovary increases at BMLO by an average of 2.98 mm and left ovary by 3.5 mm (Table 1), at BMRO, respectively: 3.55 and 2.8 mm and the most intense changes are observed in the first case in the right ovary at 14, 16 years, in the left ovary at 14, 18 years, in the second case at 14, 18, 21 and at 18, 21 years.

The results of the study showed that the length of the right ovary increases 1.23 times (from  $23.6 \pm 0.37$  to  $29.05 \pm 0.14$  mm) and the left ovary 1.35 times (from  $22.3 \pm 0.37$  to  $30.05 \pm 0.26$  mm) before menstruation with left-sided ovulation (BMLO) and before menstruation with right-sided ovulation (BMRO), respectively: 1.2 times (from  $24.05 \pm 0.46$  to  $28.5 \pm 0.4$  mm), and the most intensive growth of the length of both ovaries in both menstrual cycles is observed at 14, 19, 20 years (Tables. 1,2). It was observed that the maximum size of right ovary is observed by 22 years, left ovary by 23 years and the



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smallest on both sides is observed at 13 years. During the age period under study, the width of the right ovary increases by an average of 2.98 mm in DOMLO and 3.5 mm in left ovary (Table 1), in DOMPO, respectively: 3.55 and 2.8 mm and the most intense changes are observed in the former in the right ovary at 14, 16 years, in the left ovary at 14, 18 years, in the latter at 14, 18, 21 and at 18, 21 years.

Discussion. Comparing our results on the length of the ovary in girls from 13 to 23 years of age with the literature data, it should be noted that this length lengthens on the right side by an average of 5.3 mm, on the left side by 7.65 mm,



**Table 1.**

**Age, individual features of echo parameters of ovaries before menstruation at left-sided ovulation (X±m, Min.-Max. in mm)**

| Age      | n  | Length     |            | Width      |            | Front-rear size |            | Volume mm <sup>3</sup> |              |
|----------|----|------------|------------|------------|------------|-----------------|------------|------------------------|--------------|
|          |    | R          | L          | R          | L          | R               | L          | R                      | L            |
| 13 years | 15 | 23,6±0,37  | 22,33±0,37 | 18,67±0,18 | 19,0±0,21  | 17,87±0,44      | 17,67±0,28 | 438,33±9,21            | 426,33±11,23 |
|          |    | 20,0-27,0  | 19,0-27,0  | 16,0-20,0  | 17,0-22,0  | 13,0-22,0       | 16,0-21,0  | 320,0-520,0            | 340,0-594    |
| 14 years | 15 | 24,71±0,35 | 25,53±0,33 | 19,41±0,27 | 21,18±0,23 | 17,29±0,29      | 19,59±0,21 | 480,13±10,45           | 533,24±10,9  |
|          |    | 22,0-31,0  | 23,0-29,0  | 17,0-23,0  | 19,0-24,0  | 15,0-20,0       | 18,0-22,0  | 408,0-620,0            | 437,0-672,6  |
| 15 years | 15 | 24,27±0,22 | 25,87±0,18 | 18,93±0,19 | 20,6±0,18  | 20,4±0,21       | 21,6±0,25  | 459±5,64               | 529,13±8,5   |
|          |    | 22,0-26,0  | 24,0-28,0  | 17,0-21,0  | 19,0-22,0  | 18,0-22,0       | 19,0-24,0  | 418,0-546,0            | 456,0-618,0  |
| 16 years | 15 | 24,4±0,25  | 24,87±0,19 | 21,73±0,24 | 20,93±0,18 | 19,67±0,16      | 20,0±0,14  | 532,0-10,82            | 521,0±7,09   |
|          |    | 22,0-27,0  | 22,0-27,0  | 20,0-24,0  | 19,0-23,0  | 18,0-21,0       | 19,0-21,0  | 440,0-624,0            | 440,0-5980   |
| 17 years | 20 | 23,7±0,63  | 23,05±0,51 | 18,65±0,54 | 19,75±0,39 | 20,15±0,41      | 21,25±0,38 | 441,15±16,07           | 455,3±13,73  |
|          |    | 18,0-28,0  | 19,0-27,0  | 14,0-25,0  | 16,0-22,0  | 18,0-23,0       | 18,0-25,0  | 285,0-616,0            | 336,0-572,0  |
| 18 years | 20 | 23,3±0,36  | 24,35±0,39 | 20,25±0,21 | 21,5±0,22  | 19,85±0,22      | 21,25±0,22 | 472,5±10,53            | 524,1±10,41  |
|          |    | 18,0-26,0  | 20,0-26,0  | 19,0-22,0  | 20,0-24,0  | 18,0-21,0       | 20,0-24,0  | 36,0-572,0             | 440,0-624,0  |
| 19 years | 20 | 25,6±0,25  | 26,3±0,14  | 20,65±0,28 | 22,0±0,34  | 20,35±0,22      | 21,35±0,22 | 529,0±10,29            | 578,8±7,97   |
|          |    | 24,0-28,0  | 25,0-27,6  | 19,0-23,0  | 20,0-24,0  | 19,0-22,0       | 20,0-23,0  | 456,0-621,0            | 520,0-648,0  |
| 20 years | 20 | 27,6±0,55  | 29,1±0,46  | 19,85±0,32 | 21,45±0,25 | 20,6±0,23       | 21,95±0,17 | 547,0±12,91            | 623,915±11,5 |
|          |    | 24,0-33,0  | 26,0-33,0  | 18,0-24,0  | 20,0-25,0  | 19,0-22,0       | 21,0-23,0  | 456,0-660,0            | 540,0-726,0  |
| 21 years | 20 | 28,35±0,43 | 29,1±0,33  | 20,7±0,31  | 21,65±0,24 | 21,1±0,22       | 21,75±0,22 | 586,95±12,68           | 829,0±9,67   |
|          |    | 25,0-33,0  | 27,0-32,0  | 19,0-24,0  | 20,0-23,0  | 19,0-23,0       | 20,0-23,0  | 494,0-713,0            | 560,0-713,0  |
| 22 years | 20 | 29,05±0,34 | 29,65±0,25 | 21,6±0,32  | 22,45±0,22 | 21,65±0,52      | 21,5±0,17  | 627,75±12,54           | 669,95±7,75  |
|          |    | 26,0-31,0  | 28,0-32,0  | 20,0-24,0  | 21,0-25,0  | 20,0-31,0       | 20,0-23,0  | 540,0-744,0            | 609,0-738,0  |
| 23 years | 20 | 28,9±0,26  | 30,05±0,26 | 21,3±0,33  | 22,5±0,22  | 21,05±0,15      | 21,25±0,14 | 616,1±11,84            | 676,55±10,3  |
|          |    | 27,0-31,0  | 28,0-32,0  | 19,0-24,0  | 20,0-24,0  | 20,0-22,0       | 20,0-22,0  | 532,0-713,0            | 580,0-768,0  |

Note: R – right; L – left

**Table 2.**

**Age, individual features of echo parameters of ovaries before menstruation at right-sided ovulation (X±m, Min.-Max., in mm)**

| The ovary | n  | Length    |            | Width      |           | Front-rear size |           | Volume mm <sup>3</sup> |             |
|-----------|----|-----------|------------|------------|-----------|-----------------|-----------|------------------------|-------------|
| Возраст   |    | R         | L          | R          | L         | R               | L         | R                      | L           |
| 13 years  | 20 | 24,05±0,4 | 22,88±0,46 | 19,45±0,33 | 19,0±0,36 | 18,85±0,52      | 17,3±0,39 | 503,2±18,62            | 435,0±14,86 |
|           |    | 21,0-28,0 | 19,0-26,0  | 16,0-23,0  | 15,0-22,0 | 14,0-23,0       | 15,0-21,0 | 416,0-792,0            | 300,0-550,0 |
| 14        | 2  | 24,46±0,  | 23,67±0,   | 22,0±0,4   | 19,28±0,  | 20,33±0,        | 17,33±0,  | 573,56±22,             | 462,06±12,  |



| years           | 0         | 63                          | 45                          | 8                           | 23                          | 37                               | 34                          | 46                              | 98                             |
|-----------------|-----------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------------|-----------------------------|---------------------------------|--------------------------------|
|                 |           | 28,0-30,0                   | 20,0-27,0                   | 20,0-28,0                   | 17,0-21,0                   | 18,0-24,0                        | 15,0-19,0                   | 460,0-750,0                     | 38,0-582,0                     |
| <b>15 years</b> | <b>20</b> | 24,8±0,3<br>22,0-29,0       | 23,4±0,2<br>9<br>20,0-26,0  | 21,95±0,<br>38<br>19,0-25,0 | 19,6±0,3<br>3<br>16,0-23,0  | 20,15±0,<br>18<br>19,0-22,0      | 19,8±0,2<br>6<br>18,0-22,0  | 575,8±12,9<br>9<br>486,0-700,0  | 459,4±11,3<br>4<br>360,0-599,0 |
| <b>16 years</b> | <b>20</b> | 24,9±0,2<br>6<br>22,0-27,0  | 23,4±0,2<br>6<br>21,0-25,0  | 20,3±0,2<br>4<br>18,0-22,0  | 19,4±0,2<br>18,0-21,0       | 20,8±0,1<br>9<br>19,0-22,0       | 20,45±0,<br>15<br>19,0-22,0 | 497,6-8,51<br>432,0-572,0       | 4545±8,42<br>378,0-504,0       |
| <b>17 years</b> | <b>15</b> | 24,7±0,2<br>8<br>21,0-27,0  | 22,73±0,<br>25<br>21,0-26,0 | 18,87±0,<br>22<br>16,0-21,0 | 18,4±0,1<br>9<br>16,0-20,0  | 20,87±0,<br>18<br>19,0-22,0      | 19,93±0,<br>21<br>17,0-22,0 | 461,0±8,44<br>336,0-540,0       | 419,13±7,6<br>9<br>336,0-48,0  |
| <b>18 years</b> | <b>15</b> | 25,27±0,<br>16<br>24,0-27,0 | 23,8±0,3<br>2<br>18,0-26,0  | 21,2±0,2<br>20,0-24,0       | 20,47±0,<br>2<br>19,0-23,0  | 20,53±0,<br>17<br>19,0-23,0      | 20,0±0,1<br>5<br>18,0-22,0  | 536,2±7,35<br>480,0-648,0       | 488,2±9,64<br>342,0-575,0      |
| <b>19 years</b> | <b>15</b> | 26,27±0,<br>17<br>25,0-28,0 | 25,4±0,1<br>8<br>23,0-27,6  | 20,87±0,<br>15<br>19,0-22,0 | 20,73±0,<br>13<br>20,0-22,0 | 20,87±0,<br>15<br>20,0-23,0      | 20,6±0,1<br>7<br>19,0-23,0  | 548,8±7,07<br>475,0-616,0       | 526.6±4,99<br>480,0-594,0      |
| <b>20 years</b> | <b>15</b> | 29,67±0,<br>22<br>27,0-32,0 | 29,13±0,<br>21<br>27,0-31,0 | 21,13±0,<br>16<br>20,0-23,0 | 20,47±0,<br>14<br>19,0-22,0 | 21,60±0,<br>15<br>20,0-23,0      | 21,67±0,<br>24<br>20,0-26,0 | 627,27±7,5<br>1<br>560,0-713,0  | 596,4±6,25<br>540,0-660,0      |
| <b>21 years</b> | <b>15</b> | 29,0±0,2<br>1<br>27,0-31,0  | 27,6±0,1<br>5<br>26,0-29,0  | 23,0±0,3<br>4<br>21,0-29,0  | 21,53±0,<br>2<br>19,0-24,0  | 21,47±0,<br>17<br>20,0-<br>21,47 | 20,2±0,1<br>1<br>19,0-21,0  | 667,33±11,<br>58<br>588,0-841,0 | 595,13±8,3<br>1<br>513,0-696,0 |
| <b>22 years</b> | <b>15</b> | 29,8±0,1<br>8<br>28,0-31,0  | 28,53±0,<br>14<br>27,0-30,0 | 22,6±0,1<br>8<br>21,0-24,0  | 21,8±0,1<br>8<br>20,0-23,0  | 21,27±0,<br>11<br>20,0-22,0      | 21,0±0,1<br>2<br>20,0-22,0  | 674,07±8,2<br>7<br>588,0-744,0  | 622,47±7,0<br>5<br>560,0-690,0 |
| <b>23 years</b> | <b>15</b> | 29,47±0,<br>19<br>28,0-32,0 | 28,4±0,1<br>7<br>27,0-30,0  | 22,27±0,<br>23<br>20,0-25,0 | 21,33±0,<br>2<br>19,0-23,0  | 21,53±0,<br>12<br>20,0-23,0      | 20,87±0,<br>12<br>20,0-22,0 | 657,2±10,3<br>1<br>560,0-800,0  | 606.87±9,0<br>1<br>513,0-690,0 |

**Note:** R – right; L – left

The width at BMLO on the right side by an average of 2.98, on the left side by 3.5 mm, at BMLO - respectively: 3.55 and 2.8 mm, and the anteroposterior dimension increases 1.2-fold with BMLO on both sides, 1.84-fold with BMLO on the right and 1.25-fold on the left, volume: 1.4-fold and 1.6-fold; 1.34-fold and 1.4-fold, respectively. In this regard, we cannot agree with the opinions of O.V. Syrova (2008), who noted that in girls 17-19 years old, the size of the ovaries does not change.

The data of E.A. Bogdanova (1991), R. Devliger et al. (2003) that the volume of ovaries corresponds to 21 years of age at BMLO in our work, and the data of I.D. Evtushenko et al. (2004) - much more than our data. This discrepancy between the data of the above authors and our data is probably due to the fact that they studied ovarian volume in women 30-49 years old, and the data of G.M. Savelyeva et al. (2009), S. Granberg et al. (1989) partially agree with our results.

**CONCLUSIONS:**

1. In girls from 13 to 23 years of age, the length of the right ovary at BMLO increases on average by 5.4 mm, of the left ovary by 7.65 mm; at BMLO, respectively: by 5.8 and 6.2 mm; the anteroposterior dimension by 3.2 and 3.6 mm; by 2.7 and 3.6 mm, the width by 3.1 and 3.5 mm; by 3.55 and 2.8 mm, and the volume by 1.9 and 4.0 cmi; by 1.7 and 1.9 cmi.
2. Intensive growth in length of both ovaries at BMLO and BMLO is observed at 14, 19, 20 years of age, width at BMLO - on the right - at 14, 16 years, on the left - at 14, 18 years; at BMLO - respectively: at 14, 18, 21 and at 18, 21 years of age; anteroposterior dimension at 15 and 14, 15 years of age; at 14, 16, 20 and 15, 20 years of age, respectively; volume - in BMLO - in both ovaries at 14, 16, 22 years of age and in BMLO - on the right at 14, 15, 20 years of age and on the left at 14, 19, 20 years of age.



3. Ultrasound parameters of ovaries at the studied age periods of menstrual cycle changes non-simultaneously and with different intensity.

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