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ULTRASONOGRAPHIC FEATURES OF THE REPRODUCTIVE SYSTEM ORGANS IN 16-YEAR-OLD ADOLESCENT GIRLS BORN PREMATURELY

Alisherova Farangis Abdunabi qizi
Tashkent Medical Academy, Termiz Branch

Abstract
In recent years, an increase in gynecological diseases among adolescent girls has been observed [1]. A history of premature birth may negatively affect the process of sexual maturation and subsequently influence reproductive function. It is well known that preterm infants are more susceptible to illnesses compared to full-term infants [2]. Protecting and strengthening the health of the younger generation is one of the priorities of state demographic policy, emphasizing the importance of preventive measures aimed at reducing chronic diseases and disability [3]. Particular attention should be paid to the assessment of reproductive potential in 15–17-year-old girls, especially the evaluation of ovarian reserve [4].
Ultrasonography (US) plays a crucial role in obstetrics and gynecology, particularly in the diagnosis of diseases of the female reproductive system. It stands out for its accuracy, safety, and convenience. The application of US in obstetrics and gynecology also includes studies aimed at evaluating the functionality of reproductive organs, which is essential in pregnancy planning and infertility treatment [5].

Keywords: Ultrasonography, oligomenorrhea, hypermenorrhea.

Introduction

Objective of the study: To investigate the ultrasonographic findings of the reproductive system organs in 16-year-old adolescent girls born prematurely.

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Materials and Methods: The study involved 40 girls aged 16 years. The main group consisted of 30 adolescent girls born prematurely (at 27–36 weeks of gestation). The control group included 10 girls born full-term with normal birth weight. The study was conducted during the first phase of the menstrual cycle (days 5–7). Medical records (delivery history, outpatient charts) were analyzed, and a clinical examination was performed, including anamnesis collection and gynecological assessment. Ultrasonographic examination of the reproductive organs was carried out using the transabdominal method. Ovarian volume, the number of antral follicles, and the mean diameter of the largest follicle were measured. An "ALOKA-3500" ultrasound machine (Japan) was used. Statistical analysis was performed using the Statistic 6.0 software package.

Results:

The mothers of girls in the main group had experienced preterm delivery at various gestational ages, including as early as 27 weeks. Table 1 shows the proportion of women who underwent preterm delivery.

Table 1. Proportion of mothers with preterm deliveries

Gestational age (weeks)	Number of deliveries (n)	%
27, 29, and 30 weeks	1	3.3%
31–32 weeks	2	6.6%
33 weeks	2	6.6%
34 weeks	3	10%
35 weeks	8	26.6%
36 weeks	16	53.3%

At 27, 29, and 30 weeks of gestation, the proportion of preterm deliveries was 3.3% (1 woman). At 31–32 weeks, this indicator was 6.6% (2 women); at 33 weeks – 6.6% (2 women); at 34 weeks – 10% (3 women); and at 35 weeks – 26.6% (8 women). The highest frequency of preterm deliveries was observed at 36 weeks – 53.3% (16 women), which was statistically significant ($p < 0.001$).

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The mean height of newborns in the main group was 43.08 ± 3.12 cm, while the mean birth weight was 2479.80 ± 368.57 g.

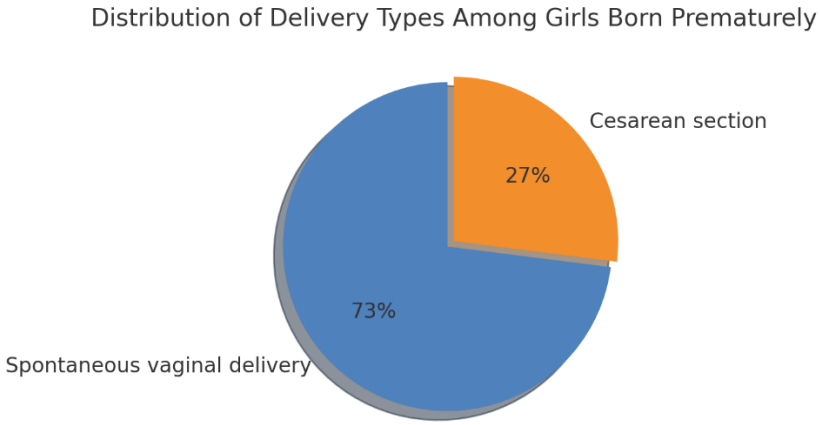

Figure 1 below illustrates the distribution of delivery types among girls born prematurely.

The number of girls born via spontaneous vaginal delivery was 22 (73%) in the main group and 8 (80%) in the control group, with no significant difference observed between the groups. Cesarean section was performed in 8 girls (27%) in the main group and in 2 adolescents (20%) in the control group. No statistically significant difference was found between the groups regarding the mode of delivery.

Table 2. Complaints Related to the Function of the Reproductive System in Girls Born Prematurely and at Term

Study groups	Delayed menstruation	Amenorrhea	Lower abdominal pain	No complaints
Main group	16	2	8	6
Control group	3	1	6	2

Girls in the main group reported more frequent complaints related to reproductive system dysfunction. Menstrual cycle delay was observed in 16 (51%) prematurely born girls, whereas opsomenorrhea was noted only in 3 (27%) adolescents from

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the control group ($p < 0.01$). Primary oligomenorrhea (absence of a regular menstrual cycle) was identified in 2 patients (24%) from the main group, while in the control group this was recorded in only 1 adolescent (8%) ($p < 0.01$). Intermenstrual lower abdominal pain occurred in 8 (13%) girls from the main group compared to 3 (5%) in the control group ($p < 0.05$). The absence of reproductive health-related complaints was recorded in 6 girls (35%) in the control group, but only in 2 patients (12%) from the main group ($p < 0.01$).

The mean age of menarche was similar in both groups: 12.8 ± 1.6 years in the main group and 12.8 ± 1.1 years in the control group. Heavy menstrual bleeding (hypermenorrhea) was observed in 10 adolescents (8%) from the main group and only in 1 patient (2%) in the control group ($p < 0.05$).

According to the results of transabdominal ultrasonography, the uterus corresponded to age-appropriate size in 25 (83%) girls from the main group. Uterine hypoplasia of varying degrees was found in 4 patients (13%), and uterine enlargement was noted in 1 girl (3%). In the control group, the uterus corresponded to the age norm in 9 adolescents (90%), while a saddle-shaped uterus was identified in 1 girl (10%). Thus, uterine hypoplasia was more frequently observed among prematurely born adolescents compared to their peers born at term ($p < 0.01$).

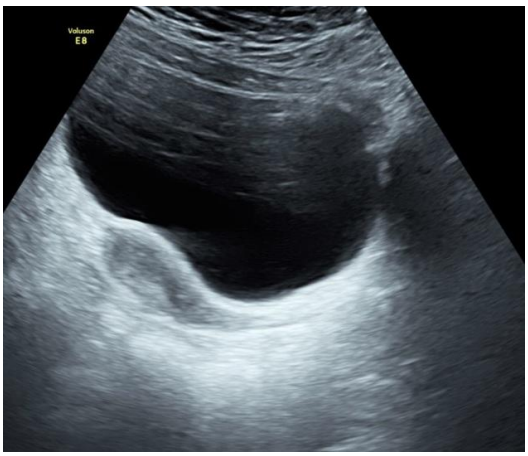

Figure 2. Ultrasonographic image of the uterus in an adolescent girl with uterine hypoplasia. A 16-year-old girl presented with complaints of amenorrhea and pelvic pain, which did not respond to nonsteroidal anti-inflammatory drugs (NSAIDs).

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Right ovary size: In the main group, 11 girls (37%) had normal-sized ovaries, 13 girls (43%) had enlarged ovaries, and 6 girls (20%) had small ovaries. In the control group, 5 girls (50%) had normal-sized ovaries, 4 girls (40%) had enlarged ovaries, and 1 girl (10%) had a small ovary.

Left ovary size: In the main group, 12 girls (40%) had normal-sized ovaries, 11 girls (37%) had enlarged ovaries, and 7 girls (23%) had small ovaries. In the control group, 6 girls (60%) had normal-sized ovaries, 3 girls (30%) had enlarged ovaries, and 1 girl (10%) had a small ovary.
No significant differences were observed between the groups in terms of average ovarian size.

Average antral follicle count:

- Right ovary: 8.45±2.91 in the main group, 7.65±3.32 in the control group
- Left ovary: 8.48±4.25 in the main group, 7.89±3.12 in the control group

An antral follicle count of more than 10 was observed in 16 girls (53%) in the main group and in 3 girls (30%) in the control group ($p<0.05$).

Mean diameter of the largest follicle:

- Main group: 5.65±2.73 mm
- Control group: 7.76±3.62 mm ($p<0.05$)

Conclusion

Preterm birth is a factor affecting the reproductive system in 16-year-old girls. Menstrual cycle disturbances, including primary and secondary oligomenorrhea as well as hypermenorrhea, were more frequently observed in girls born preterm. These girls also reported more lower abdominal pain between menstrual periods. In the control group, reproductive system pathologies were less common. Preterm girls showed a higher prevalence of uterine hypoplasia and follicular overpopulation (more than 10 antral follicles). The mean diameter of the largest follicle was smaller compared to the control group. Additionally, girls born before 34 weeks of gestation had larger ovarian volumes.

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Thus, ultrasonographic examination of the reproductive system in 16-year-old girls born preterm reveals specific features. Evidence-based preventive measures are required to support and optimize reproductive health in this population.

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