MINISTRY OF HEALTH OF UKRAINE

ODESA NATIONAL MEDICAL UNIVERSITY

Department of Obstetrics and Gynecology

APPROVED

Vice-rector for scientific and pedagogical work

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METHODOLOGICAL RECOMMENDATIONS FOR PRACTICAL CLASSES ON THE ELECTIVE DISCIPLINE "ULTRASOUND DIAGNOSTICS IN OBSTETRICS AND GYNECOLOGY"

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TOPIC 1

"BASICS OF ULTRASOUND DIAGNOSTICS OF THE PELVIC ORGANS IN GYNECOLOGY."

Purpose: to become familiar with the basics of ultrasound examination of the pelvic organs in obstetric and gynaecological practice. To study the general principles and key concepts of performing an ultrasound investigation. To assimilate the physical foundations of ultrasound necessary for effective work with diagnostic equipment, as well as modern techniques and approaches in ultrasound diagnostics. To master the skills of correctly interpreting echograms and formulating an ultrasound report in accordance with the obtained data. To acquire knowledge of comprehensive ultrasound investigation in the diagnosis of diseases of the female reproductive system.

To understand the relevance and expediency of using ultrasound diagnostics in the examination of gynaecological patients, which is due to the widespread adoption of ultrasound echography as a modern, highly informative and accessible method of examination. The use of ultrasound diagnostics contributes to ensuring a high level of qualified medical care in obstetrics and gynecology.

Key concepts:

1. Subject, tasks and methods of ultrasound diagnostics.
2. Determining the scope of application of ultrasound diagnostics, the main goals and objectives, and an overview of the methods used to study the organs of the reproductive system.
3. The place of ultrasound diagnostics in the complex clinical examination of gynaecological patients.
4. The role of ultrasound as one of the key diagnostic tools, complementing the history, physical examination and other laboratory and instrumental methods.
5. Concept of the ultrasound research method.
6. Basics of ultrasound visualization, principles of image formation and features of using high-frequency sound waves for medical diagnosis.
7. General characteristics of ultrasound diagnostic methods.
8. Overview of the main ultrasound modes (B-mode, Doppler methods, three-dimensional scanning) with their capabilities and limitations.
9. Physical foundations of ultrasound diagnostics.
10. Laws of propagation of ultrasound, reflection, refraction and absorption of sound waves in body tissues.
11. Biophysics of ultrasound.

12. Interaction of ultrasound waves with biological tissues, mechanisms of image formation, wave parameters and their influence on the quality of diagnostics.
13. Components of the ultrasound diagnostic system.
14. Description of the main components of the equipment: ultrasound transducer, signal processing unit, display and auxiliary devices.
15. Conditions for conducting ultrasound investigation of reproductive organs.
16. Requirements for preparing the patient, optimal positions for scanning, technical and hygienic standards.
17. Methods and modes of ultrasound examination: advantages and disadvantages of the ultrasound method.
18. Description of common techniques for performing ultrasound, analysis of their effectiveness, accuracy, safety and limitations in diagnostics.
19. Necessary plan of examination and parameters during ultrasound examination of the pelvic organs.
20. Sequence of actions during the examination, main parameters to be measured, standards for the presentation of results.

Plan

1. Theoretical questions:

1. Subject, tasks and methods of ultrasound diagnostics.
– Definition of the scope of application of ultrasound diagnostics in obstetrics and gynecology.
– Main goals, objectives and classification of ultrasound research methods.
2. The place of ultrasound diagnostics in the complex clinical examination of gynaecological patients
– The role of ultrasound as part of the general clinical examination.
– Interaction with other diagnostic methods.
3. Concept of the ultrasound research method
– Principles of ultrasound image formation.
– Features of using high-frequency sound waves.
4. General characteristics of ultrasound diagnostic methods
– Description of the main modes: B-mode, Doppler methods, 3D/4D ultrasound.
– Comparison of their advantages and limitations.
5. Physical foundations of ultrasound diagnostics
– Laws of propagation of ultrasound in tissues.
– Phenomena of reflection, refraction, absorption and scattering of sound waves.
6. Biophysics of ultrasound
– Interaction of ultrasound with biological tissues.

– Mechanisms of echo signal formation.

7. Components of the ultrasound diagnostic system

– Main components of the equipment: probe, processor, display.

– Additional devices and accessories.

8. Conditions for conducting ultrasound investigation of the reproductive organs.

– Preparation of the patient for the examination.

– Optimal positions and technique.

– Sanitary and hygienic requirements.

9. Methods and modes of ultrasound examination: advantages and disadvantages

– Description of common investigation methods.

– Analysis of their effectiveness and safety.

10. Necessary plan of examination and parameters during ultrasound examination of the pelvic organs

– Sequence of the examination.

– Main parameters and their normal values.

– Standards for the presentation of conclusions.

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2. Questions for self-control:

A. What is the subject of ultrasound diagnostics in obstetrics and gynecology?

B. What are the main tasks of ultrasound examination in gynaecological practice?

C. Which methods of ultrasound diagnostics are used in obstetrics and gynecology?

D. What place do ultrasound diagnostics occupy in the complex examination of gynaecological patients?

E. What are the basic principles of ultrasound image formation?

F. Which ultrasound modes do you know? Name their advantages and limitations.

G. What physical foundations underlie ultrasound diagnostics?

H. What are the biophysics of ultrasound and how do ultrasound waves interact with body tissues?

I. What are the main components of the ultrasound diagnostic system?

J. What conditions are necessary for high-quality ultrasound investigation of the reproductive organs?

K. Which methods and modes of ultrasound examination are used in obstetrics and gynecology?

L. What are the main advantages and disadvantages of the ultrasound diagnostic method?

M. What plan of examination of the pelvic organs should be followed when performing an ultrasound examination?

N. Which parameters need to be evaluated during ultrasound examination of the pelvic organs?

O. How to correctly interpret ultrasound data and formulate a conclusion?

Assignments for self-study of the material:

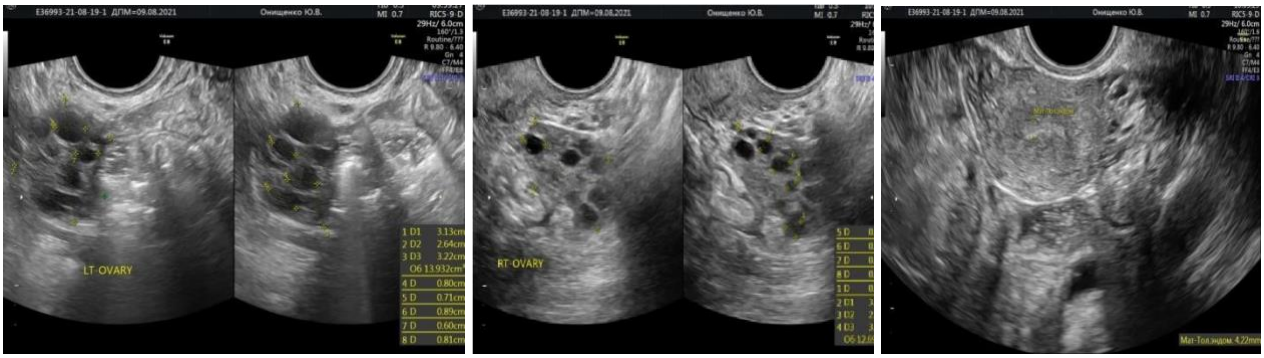
Practical work / individual tasks:

Situational tasks:

Task 1.

Patient R., 19 years old, consulted a gynaecologist complaining of absence of menstruation for 10 days. History: her menstrual cycle is irregular. According to the ultrasound examination: uterus in anteflexion, dimensions 38 × 29 × 39.2 mm. The myometrium has a homogeneous echostructure. Endometrium: poorly delineated from the myometrium, thickness 4 mm, visualized along the entire length, homogeneous echostructure. Right ovary 32.6 × 23.1 × 32.2 mm, volume 12.7 sm³, finely follicular echostructure. Left ovary: 31.3 × 26.4 × 32.2 mm, volume 14 sm³, finely follicular echostructure.

Tasks: Establish a preliminary diagnosis according to the ultrasound findings.

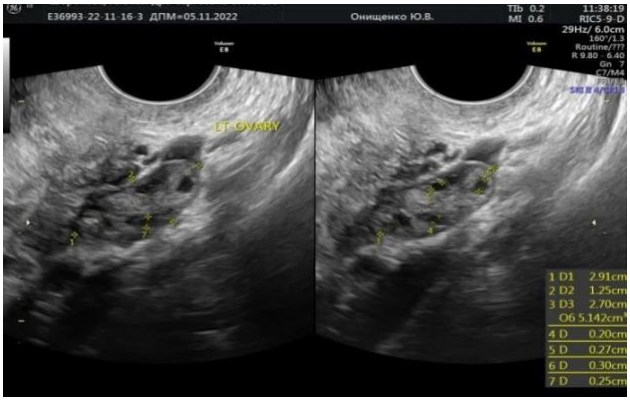


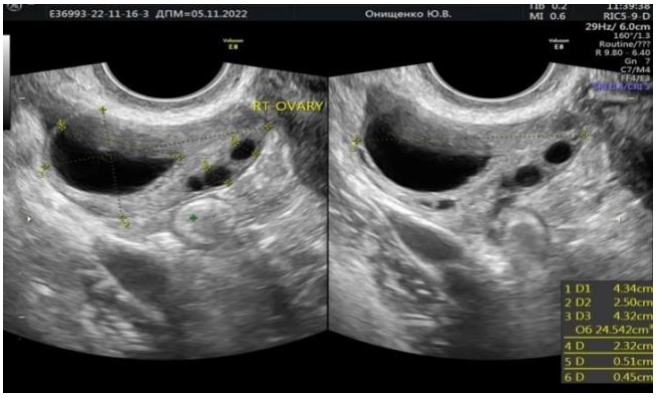
Answer: The ultrasound pattern does not correspond to the phase of the menstrual cycle. Luteal phase insufficiency (LPI?). Ultrasound picture of multifollicular ovaries. Additional hormonal profile testing is recommended.

Task 2

Patient Z., 30 years old, consulted a gynaecologist complaining of moderate pain in the lower abdomen. History: last menstruation 14 days ago, menstrual cycle regular — 5–6/28–30 days, not painful. Gravida 0, para 0, abortions 0. Gynaecologic history is unremarkable. Contraceptive method — condom. Ultrasound findings: uterus in anteflexion, dimensions 46.1 × 37.4 × 52 mm. Myometrium homogeneous. Thickness of the myometrium along the anterior wall 15.2 mm and along the posterior wall 15.3 mm. Endometrium: clearly delineated from the myometrium, thickness 8.5 mm, secretory type. Cervix length 28.7 × 23.9 mm, homogeneous echostructure. Right ovary 30.9 × 24.3 × 27.1 mm, finely follicular echostructure. Left ovary

36.7 × 30.6 × 27.6 mm, finely follicular echostructure; near the lateral pole of the ovary an anechoic cystic formation measuring 21.4 × 20.5 mm is visualized (dominant follicle).





Tasks: Establish a preliminary diagnosis according to the ultrasound findings.

Answer: The ultrasound pattern corresponds to the phase of the menstrual cycle. Ultrasound signs of ovulation.

Clinical tasks:

Task 1.

A 42-year-old woman presented to the women's consultation with complaints of prolonged and heavy menstruation for 8 months, aching pain in the lower abdomen and weakness. On gynaecological examination the body of the uterus is enlarged to 11–12 weeks' size, dense, limited in movement, painless. Haemoglobin in the blood analysis 90 g/L.

Task: Determine the physician's tactics and draw up a plan of diagnostic studies.

Answer: A transvaginal ultrasound examination of the pelvic organs.

Task 2.

A girl aged 8 came to the paediatric gynaecologist complaining of bloody discharge from the genital tract for 2 days. History: premature birth, measles, and rubella at age 5. Development of secondary sexual characteristics started at age 6. Objectively: of correct physique, height 140 cm, weight 40 kg. Somatic development corresponds to age 12. Examination of external genitalia: normally developed, pubic hair of the female type. Vaginal discharge is moderate, bloody. Rectal examination: the body of the uterus is anteverted, larger than the age norm, dense, painless. Adnexa are not palpable.

Tasks:

1. What is the most likely diagnosis?

2. What examination is necessary to determine the diagnosis?

3. What treatment is appropriate in this case?

Answer:

1. Precocious sexual development (idiopathic), isosexual type, full form.

2. Ultrasound of the pelvic organs, determination of FSH, LH and oestradiol levels, CT of the pituitary gland.

3. In the absence of hormone-producing tumours, moderate levels of pituitary and ovarian hormones, and constitutional type of precocious puberty — observation.

Test questions for self-control:

1. Which phase of the menstrual cycle corresponds to a myometrial thickness of 6–8 mm, secretory type?

A. First phase of the cycle — days 1–9

B. Ovulatory phase — days 10–15

C. Second phase of the cycle — days 16–24

D. Menopause

2. In which ultrasound scan is it advisable to measure the thickness of the anterior and posterior walls of the uterus?

A. Transverse section (axial section)

B. Longitudinal echographic section (sagittal scan)

C. Left lateral scan.

D. Right lateral scan

3. In gynecology, ultrasound is not used to examine the pelvic organs for:

A. Determining the position of the uterus.

B. Determining the structure of the ovaries.

C. Determining the structure of the fimbriae of the uterine tubes.

D. Determining the size of the body and cervix of the uterus.

E. Assessing the thickness and structure of the uterine mucosa.

Correct answers: 1 — C; 2 — A; 3 — C.

TOPIC 2

"ULTRASOUND DIAGNOSTICS OF BE NIGN UTERINE TUMOURS"

Purpose: To develop an understanding of the importance and capabilities of ultrasound diagnostics in the detection and assessment of benign uterine tumours (leiomyomas, fibroids, endometrial polyps, adenomyosis, etc.). Ultrasound echography is the main, highly informative and accessible method of examination that allows determination of the size, location and structure of the tumour, features of its blood supply, as well as dynamic monitoring of the effectiveness of treatment.

Key concepts:

1. The place of ultrasound diagnostics in the comprehensive clinical examination of gynaecological patients with benign uterine masses.
2. Ultrasound classification of benign uterine masses according to FIGO.
3. Ultrasound topography and biometry of uterine fibroids.
4. Determination of the features of the echostructure of myomatous nodes.
5. Use of Doppler and methods of visualizing blood flow in myomatous nodes and uterine vessels.
6. Ultrasound criteria for hyperplastic endometrial processes.
7. Examination plan and main parameters during ultrasound of the pelvic organs.

Plan

1. Theoretical questions:

1. Ultrasound topography and biometry of uterine fibroids. FIGO classification of benign uterine masses.
2. Features of the echostructure of myomatous nodes. Typical echo characteristics of fibroids.
3. Features of the echostructure of uterine fibroids at stages 0–2 according to the FIGO classification. Correlation of the ultrasound picture with clinical symptoms.
4. Features of the echostructure of uterine fibroids at stages 3–4 according to the FIGO classification. Correlation of the ultrasound picture with clinical symptoms.
5. Features of the echostructure of uterine fibroids at stages 5–6 according to the FIGO classification. Correlation of the ultrasound picture with clinical symptoms.
6. Features of the echostructure of uterine fibroids at stages 2–5 according to the FIGO classification. Correlation of the ultrasound picture with clinical symptoms.
7. Features of ultrasound diagnostics of cervical fibroids. Correlation of the ultrasound picture with clinical symptoms of the tumour.

8. Use of Doppler in the study of myomatous nodes and uterine vessels: methods, parameters and clinical significance.
9. Ultrasound criteria for hyperplastic processes of the endometrium.
10. Plan of examination of the pelvic organs during ultrasound of gynaecological patients.

2. Questions for self-control:

1. What place does ultrasound diagnostics occupy in the comprehensive examination of gynaecological patients with suspected benign uterine masses?
2. What are the advantages of ultrasound in diagnosing uterine fibroids compared with other imaging methods?
3. What are the features of the ultrasound topography of uterine fibroids?
4. What is the concept of biometry of uterine fibroids and which parameters does it include?
5. What is the essence of the FIGO classification of uterine fibroids?
6. What are the features of the echostructure of myomatous nodes of different types according to FIGO (0–2, 3–4, 5–6)?
7. What are the typical echo characteristics of uterine fibroids on ultrasound?
8. How to differentiate submucosal, intramural and subserosal nodes on ultrasound?
9. What are the signs of cervical fibroids on ultrasound?
10. How does the ultrasound picture of fibroids correlate with the clinical symptoms?
11. What is Doppler and what is its role in the diagnosis of uterine fibroids?
12. What are the features of blood flow in myomatous nodes using Doppler?
13. What are the ultrasound signs of endometrial hyperplastic processes?
14. What are the differences in the ultrasound picture between uterine fibroids and adenomyosis?
15. What is the algorithm for examining the pelvic organs when suspecting a fibroid?
16. Which parameters must be specified in the ultrasound protocol for the diagnosis of uterine fibroids?
17. What are the limitations and possible errors of ultrasound diagnostics of uterine fibroids?
18. What are the features of monitoring uterine fibroids using ultrasound over time?
19. What are the indications for repeat or additional examination after ultrasound?
20. How does the location and size of the node affect the treatment strategy?

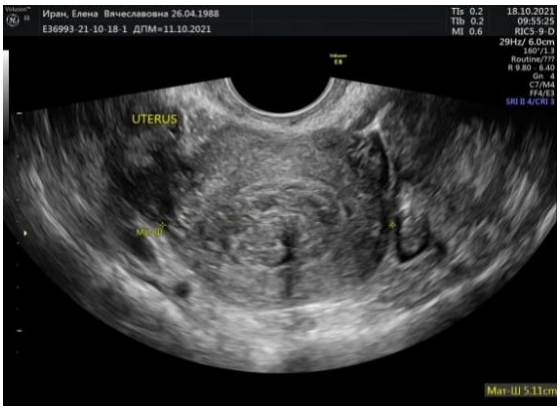
Assignments for self-study of the material:

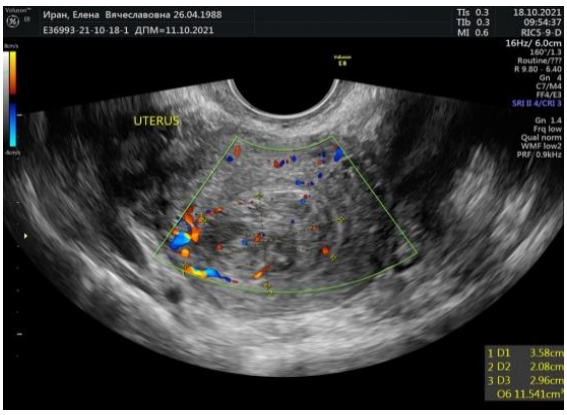
Practical work / individual tasks:

Situational tasks:

Task 1.

A 37-year-old woman consulted an obstetrician-gynaecologist with complaints of heavy bleeding from the genital tract accompanied by aching pain in the lower abdomen for 9 days. On bimanual examination the uterus is enlarged to 7 × 5 × 7 cm, adnexa not determined. According to the ultrasound of the pelvic organs — uterus in anteflexion, midline position; shape irregular, deformed. Endometrium: poorly delineated from the myometrium, visualized fragmentarily, deformed due to a hyperechoic formation, round in shape, located in two-thirds of the uterine cavity. Right ovary at the right margin of the uterus, sizes 23.8 × 11.6 × 20.8 mm, volume 3 sm³, homogeneous echostructure, the follicular apparatus is not visualized. Left ovary: at the left margin, sizes 21 × 13 × 20.6 mm, volume 2.9 sm³, homogeneous echostructure, the follicular apparatus is not visualized. The left fallopian tube is not visualized.





Tasks:

1. Which diagnostic methods should be performed first?
2. What is the most likely diagnosis?

Answer:

1. Laboratory follow-up examination of the patient — complete blood count, coagulation profile, biochemical blood analysis.
2. Uterine fibroid, submucosal variant, type 0–1 by FIGO.

Clinical tasks:

Task 1.

Patient V., 42 years old, consulted due to aching pain in the lower abdomen. History: menstrual cycle irregular, menses painful, heavy of the type of abnormal uterine bleeding for 6 months. Parity: live births 5, pregnancies 2, abortions 3. Examination: abdomen of normal configuration. Vagina

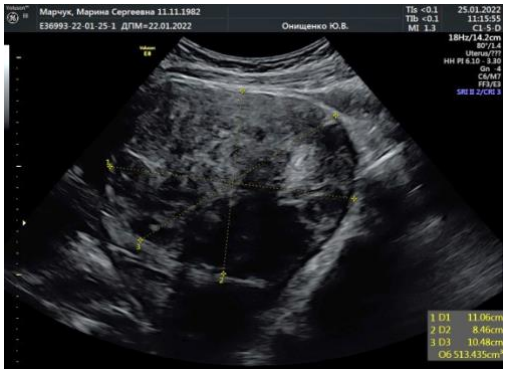
and cervix unremarkable, pink. Uterus dense, enlarged to 6 × 7 × 7 cm, deformed, limited mobility, surface smooth. Ovaries are not determined, parametrium free.

Task: Formulate a preliminary diagnosis and determine further treatment tactics.

Answer: Uterine fibroid, intramural variant, type 3–4 by FIGO. Ultrasound of the pelvic organs, laboratory diagnosis — complete blood count, coagulation profile.

Task 2.

A 46-year-old patient is troubled by frequent urination, aching pain in the lower abdomen, heavy menses during the last 6 years. Previously she did not seek gynaecologic care. Examination by a urologist revealed no pathology of the urinary system. Bimanual examination: uterus enlarged to 11 × 9 × 12 cm, irregular in shape, dense, appendages not palpable. On ultrasound of the pelvic organs the uterus is enlarged to 13 × 10 × 12 cm due to a hyperechoic formation on the anterior wall located subserosal.



Task:

1. Determine further diagnostic tactics.
2. Formulate the most likely diagnosis.

Answer:

1. Complete blood count, coagulation profile, biochemical analysis, transvaginal ultrasound of the pelvic organs, MRI if necessary.
2. Uterine fibroid, subserous variant, type 6–7 by FIGO.

Test questions for self-control:

1. Which ultrasound parameter is most important for differentiating submucosal fibroids from endometrial polyps?

A. Size of the uterus
B. Thickness of the endometrium
C. Localization of the lesion within the uterine cavity
D. Structure of the myometrium

2. Which FIGO type corresponds to an intramural fibroid without extension to the uterine cavity?
A. Type 0
B. Type 2
C. Type 3
D. Type 5

3. What is the most informative imaging method for assessing blood supply to a myomatous node?
A. B-mode ultrasound
B. Colour Doppler
C. MRI without contrast
D. X-ray

4. Which symptom is most typical for submucosal fibroids?
A. Lower abdominal pain
B. Heavy menstrual bleeding
C. Urinary frequency
D. Constipation

5. Which of the following is an indication for surgical treatment of uterine fibroids?
A. Asymptomatic intramural fibroid 2 cm in diameter
B. Subserous fibroid 4 cm in diameter without symptoms
C. Submucosal fibroid causing anaemia and infertility.
D. Observation during pregnancy

Correct answers: 1 — C; 2 — C; 3 — B; 4 — B; 5 — C

TOPIC 3

"ULTRASOUND DIAGNOSTICS OF BENIGN OVARIAN NEOPLASMS"

Purpose: To master theoretical knowledge and practical skills of ultrasound examination of benign ovarian masses. To ensure understanding of the ultrasound criteria for differentiating between simple cysts, complex formations and solid nodules. To study the standards of pre-operative non-invasive imaging that minimize the risk of misdiagnosis. To build competence in interpreting echographic images for accurate diagnosis and selection of optimal treatment tactics. To raise awareness of the use of Doppler sonography to assess vascularization of tumours and to detect signs of potential malignancy. To develop skills in interpreting ultrasound data in combination with laboratory indicators (particularly CA-125) and the clinical picture of the patient.

Key concepts:

1. Main parameters of ultrasound diagnostics in the complex clinical examination of gynaecological patients with ovarian neoplasms.
2. Ultrasound criteria for benign ovarian tumours according to O-RADS.
3. Differential ultrasound diagnosis of adnexal masses.
4. The role of transvaginal and transabdominal ultrasound in the diagnosis of benign ovarian neoplasms.
5. Necessary examination plan and parameters during ultrasound of the pelvic organs.
6. Differential diagnosis of benign and malignant ovarian neoplasms according to ultrasound data.
7. Importance of three-dimensional (3D) echography in the visualization of benign tumours of the pelvic organs.
8. Use of colour and power Doppler to detect vascularization of tumour formations.
9. Features of ultrasound in the dynamic observation of patients after conservative or surgical treatment of ovarian neoplasms.
10. Possibilities of combining ultrasound with other imaging methods (MRI, CT) in difficult diagnostic cases.

Plan

1. Theoretical questions:

1. Differential ultrasound diagnosis of benign neoplasms and cysts of the ovaries.
2. Use of O-RADS classification categories 1 and 2 when an ovarian neoplasm is detected on ultrasound.

3. Use of O-RADS classification categories 3 and 4 when an ovarian neoplasm is detected on ultrasound.
4. Use of O-RADS category 5 when an ovarian neoplasm is detected on ultrasound.
5. Morphological features of simple and complex ovarian cysts according to ultrasound data.
6. Ultrasound criteria distinguishing functional cysts from pathological ones.
7. Features of ultrasound diagnosis of endometrioid ovarian cysts.
8. Ultrasound signs of dermoid cysts (mature teratomas) of the ovary.
9. Doppler parameters in assessing blood flow in benign ovarian neoplasms.
10. Use of 3D and 4D ultrasound in the diagnosis of ovarian cysts.
11. The role of transvaginal and transabdominal approaches in the diagnosis of ovarian neoplasms.
12. The importance of determining ovarian volume and contours in assessing its pathology.
13. Use of the IOTA scale to assess benign formations.
14. Features of differentiating benign and borderline ovarian tumours according to ultrasound data.
15. The role of serial (dynamic) ultrasound observation when a benign cyst is suspected.
16. Influence of the phase of the menstrual cycle on the interpretation of ovarian ultrasound results.
17. Assessment of the internal content of a cyst according to ultrasound data.
18. Clinic-ultrasound correlation in establishing the diagnosis of benign ovarian neoplasms.
19. Errors and limitations of ultrasound diagnostics of cysts and benign ovarian tumours.
20. Standardization of the description of ultrasound findings in gynecology.

2. Questions for self-control:

1. Which ultrasound criteria distinguish a simple cyst from a complex one?
2. How do O-RADS categories 1 and 2 differ in prognosis and management of the patient?
3. What characteristics of an ovarian neoplasm correspond to O-RADS categories 3 and 4?
4. What does O-RADS category 5 mean and what management does it involve?
5. What are the features of Doppler in benign neoplasms?
6. What ultrasound signs are characteristic of an endometrioid cyst?
7. How does a dermoid cyst appear on ultrasound?
8. What are the advantages of 3D and 4D modes in the assessment of ovarian neoplasms?
9. When is it appropriate to use a transvaginal and when a transabdominal approach?

10. How does the phase of the menstrual cycle affect visualization of the ovaries?
11. What IOTA criteria indicate a benign nature of a formation?
12. Why is it important to conduct serial ultrasound observation when a functional cyst is suspected?
13. What errors are possible when assessing an ovarian neoplasm on ultrasound?
14. What changes in the internal content of a cyst may indicate its complication?
15. Why is it important to standardize the description of ultrasound findings in gynecology?

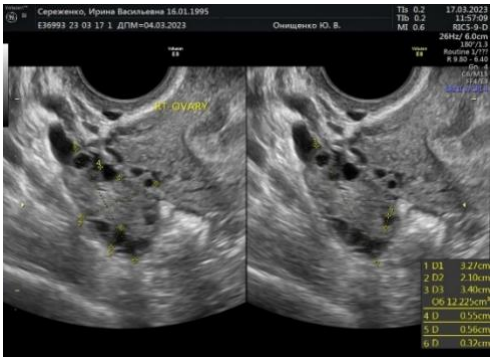
Assignments for self-study of the material:

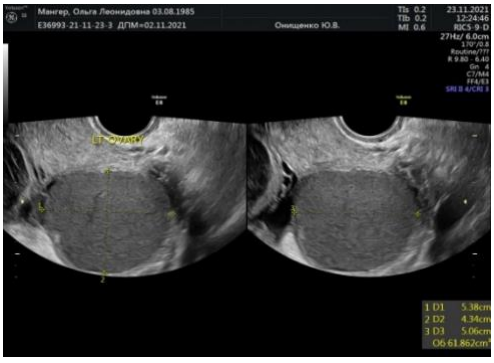
Practical work / individual tasks:

Situational tasks:

Task 1.

1. A 32-year-old woman consulted an obstetrician-gynaecologist complaining of pain in the lower abdomen, in the left iliac region, arising 5–6 days before menstruation. On bimanual examination: uterus not enlarged (5 × 4 × 4 cm), adnexa on the right not enlarged, painless; on the left enlarged to 5 cm, limited mobility, painful. According to the ultrasound of the pelvic organs — uterus in anteflexion, midline; correct shape, even contours. Endometrium is clearly delineated from the myometrium, thickness up to 8.3 mm, secretory. Right ovary at the right margin of the uterus, size 32.7 × 24 × 31 mm, volume 22 cm³, homogeneous echostructure, follicular apparatus with 6–7 follicles measuring 5.6; 5.5; 3.2 mm. Left ovary at the left margin, enlarged to 5.38 × 4.34 × 5.06 cm, volume 61.8 cm³ due to a hypoechoic formation with a “ground-glass” sign; the follicular apparatus is not visualized.





Tasks:

— Which diagnostic methods should be performed first?
— What is the most likely diagnosis?

Answer:

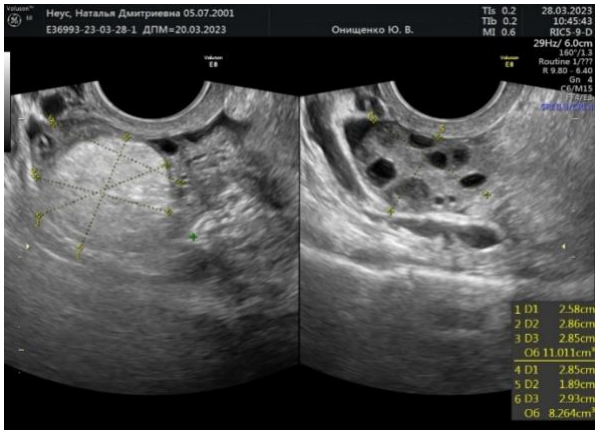
— Laboratory follow-up examination — complete blood count, coagulation profile, biochemical blood analysis.
— Myoma of the uterus, submucosal variant, type 0–1 FIGO.

Clinical tasks:

Task 1.

Patient N., 21 years old, consulted due to aching pain in the lower abdomen, in the right iliac region. History: menstrual cycle irregular, delays of menses up to 1–2 months, menses painful, moderate. Marker tests (CA-125, HE-4, ROMA index) within normal limits. Gravida 0, para 0, abortions 0. Examination: abdomen soft, tender in lower parts. Signs of peritoneal irritation negative, mild muscular defence. Vagina and cervix unremarkable, pink. Uterus dense, 4 × 3 × 4 cm, not deformed, mobile, surface smooth. Left ovary unchanged, painless. Right ovary tender, enlarged to 3 × 3 cm.

Ultrasound of the pelvic organs — right ovary closely adjacent to the right side of the uterus, painful on probe traction, contour even but unclear, size 25.8 × 28.6 × 28.5 mm, volume 11 cm³ due to a cystic formation measuring 28.5 × 18.9 × 29.3 mm, volume 8.2 cm³, heterogeneous echostructure, hyper-echoic content, capsule thickened to 3.1 mm. At the periphery by the lateral edge ovarian tissue is visualized containing 2–3 antral follicles measuring 2.3 and 3.1 mm.



Task: Formulate a preliminary diagnosis and determine further treatment tactics

Answer: Dermoid cyst of the right ovary. General clinical examination, operative treatment — laparoscopic cyst enucleation.

Task 2.

A 40-year-old patient complains of frequent urination, aching pain in the lower abdomen and heavy menses over the last 2 years. She had not previously sought gynaecologic help. Urologic examination revealed no pathology of the urinary system. Bimanual examination: uterus not enlarged (4 × 5 × 4 cm), correct shape, dense, adnexa not palpated.

Ultrasound of the pelvic organs — left ovary at the left margin of the uterus, displaced toward the fundus, tender on probe traction, enlarged due to a cystic formation measuring 53.8 × 43.4 × 50.6 mm, volume 62 cm³, heterogeneous, mixed echo content, capsule thickened to 2.1 mm, “ground-glass” sign.

Task: Establish the diagnosis and determine further treatment tactics.

Answer: Endometriotic cyst of the left ovary. General clinical examination, operative treatment — laparoscopy with cyst enucleation or selection of conservative hormonal therapy (dienogest).

Test questions for self-control:

1. A 17-year-old patient consulted a gynaecologist with a delayed menstruation for 12 days and aching lower abdominal pain. On ultrasound a cavity filled with fluid of significant size, located above the uterus, round or oval, with homogeneous content and no internal inclusions was detected. What is the most likely diagnosis?

   A. A. Follicular cyst
   B. B. Serous cystadenoma
   C. Papillary cystadenoma
   D. D. Ovarian teratoma
   E. E. Mucinous cystadenoma

2. A 36-year-old patient consulted an ultrasound doctor due to irregular menstrual cycles over a year. On ultrasound, a unilateral mass of the right ovary located at the level of the uterine fundus extending to the right parametrial region, 2-camera with an irregular, locally nodular surface was detected.
   A. Serous cystadenoma of the right ovary
   B. Papillary cystadenoma of the right ovary
   C. Mucinous cystadenoma of the right ovary
   D. Dermoid cyst of the right ovary

3. During ultrasound of the pelvic organs in a 16-year-old girl, a round formation to the right and behind the uterus, limited in mobility, with variable wall thickness 2–8 mm and fine suspension content was detected. Wall echogenicity low or medium. Likely diagnosis:
   A. Dermoid cyst
   B. Follicular cyst
   C. Endometriotic cyst
   D. True ovarian tumour

4. In a 19-year-old girl on day 16 of the menstrual cycle, ultrasound revealed a hypoechoic formation 55 mm in diameter in the right ovary with thin walls. On recto-abdominal examination only an enlarged right ovary is noted. What is the proper management?
   A. A. Determine blood CA-125 level.
   B. B. Repeat ultrasound and gynaecologic examination on day 6–9 of the next menstrual cycle
   C. C. Course of anti-inflammatory therapy
   D. D. Immediate surgical treatment

5. In a 14-year-old patient a tumour-like formation to the right and above the uterus of dense-elastic consistency, nodular with clear contours, painless, mobile, diameter up to 10 cm was detected.
   A. Ovarian cyst
   B. Fibromatous uterine node
   C. Ovarian cystoma
   D. Ovarian endometrioma
   E. Ovarian fibroma

Correct answers: 1 — A; 2 — B; 3 — C; 4 — B; 5 — C

TOPIC 4

"ULTRASOUND DIAGNOSTICS OF EMERGENCY CONDITIONS IN GYNECOLOGIC PRACTICE"

Purpose: To consolidate and deepen students' knowledge of the role of ultrasound examination (US) in the diagnosis of emergency conditions in gynecology, mastery of techniques and algorithms for its implementation, study of the features of the sonographic picture in the most common urgent situations, assimilation of differential diagnostic criteria, and familiarization with modern approaches and directions of diagnosis that ensure timely diagnosis and provision of necessary medical care to the patient.

Key concepts:

1. General principles of ultrasound in urgent gynecology — advantages and limitations of the method; algorithm of physician actions; features of transabdominal and transvaginal approaches.
2. Ectopic pregnancy — main ultrasound criteria of various forms of ectopic pregnancy; Doppler markers ("ring of fire" sign, vascularization); differential diagnosis with ovarian cysts and functional formations.
3. Ovarian apoplexy (rupture of a cyst, haemorrhage) ultrasound signs: hypo- or hyperechoic formation, presence of free fluid; features of the picture at different degrees of bleeding; differentiation from ectopic pregnancy.
4. Torsion of the pedicle of an ovarian tumour — ultrasound and Doppler criteria: absence or decrease of blood flow; signs of edema and tissue necrosis; importance of dynamic observation.
5. Pelviperitonitis — ultrasound signs: presence of fluid with septa, encapsulated purulent formations; signs of involvement of adjacent organs.
6. Necrosis of myomatous nodes — typical ultrasound signs and Doppler criteria; differences from submucosal fibroid and tumours of other origins.
7. Abnormal uterine bleeding (AUB) role of ultrasound in the primary diagnosis of AUB; differential-diagnostic criteria: endometrial hyperplasia, polyp, myoma, malignant formations.
8. Algorithms for examining a patient with an urgent condition — necessary minimum of clinical and laboratory data; plan of ultrasound examination of the pelvic organs; key parameters to be evaluated.

Plan

1. Theoretical questions:

1. The role of ultrasound diagnostics in the detection and management of emergency conditions in gynecology.

2. Principles and techniques of transabdominal and transvaginal ultrasound.
3. Ultrasound criteria for various forms of ectopic pregnancy.
4. Doppler markers in ectopic pregnancy.
5. Sonographic manifestations of ovarian apoplexy and differentiation from other pathologies.
6. Signs of torsion of the pedicle of an ovarian tumour according to ultrasound and Doppler.
7. Ultrasound signs of Pelviperitonitis and purulent-inflammatory processes of the pelvic organs.
8. Ultrasound and Doppler criteria for necrosis of myomatous nodes.
9. Differential diagnosis of abnormal uterine bleeding by ultrasound.
10. The role of colour and power Doppler in the diagnosis of urgent conditions.
11. Algorithm for examining a patient suspected of an urgent condition in gynecology.
12. Comparison of the capabilities of ultrasound with other imaging methods (MRI, CT).
13. Typical errors and limitations of ultrasound diagnostics in urgent cases.
14. The importance of dynamic ultrasound control in the postoperative period.
15. Modern protocols and international recommendations on the use of ultrasound in emergency gynecology.

2. Questions for self-control:

1. What are the main advantages of ultrasound in the diagnosis of urgent conditions in gynecology?
2. What is the difference between transabdominal and transvaginal approaches?
3. Which echographic signs are most characteristic of tubal ectopic pregnancy?
4. What does the “ring of fire” sign mean in Doppler?
5. Which ultrasound signs indicate ovarian apoplexy?
6. How can ultrasound distinguish torsion of a tumour pedicle from ovarian apoplexy?
7. What are the ultrasound manifestations of Pelviperitonitis?
8. How do the ultrasound signs of necrosis of a myomatous node differ from those of a normal node?
9. Which criteria help differentiate an endometrial polyp from hyperplasia in abnormal uterine bleeding?
10. In which cases are it advisable to use colour Doppler in urgent conditions?
11. What are the most common errors in sonographic diagnosis of ectopic pregnancy?
12. When is there a need for additional imaging methods (MRI, CT)?
13. Which signs indicate the need for urgent surgical intervention according to ultrasound?
14. What role does ultrasound play in monitoring postoperative complications?

15. Which modern clinical-sonographic algorithms are used for the diagnosis of urgent conditions in gynecology?

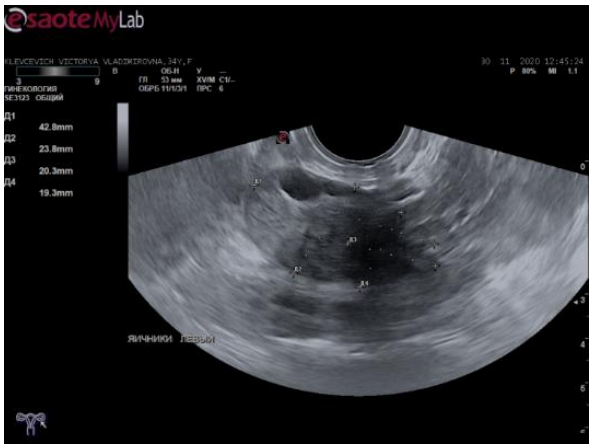
Assignments for self-study of the material:

Practical work / individual tasks:

Situational tasks:

Task 1.

1. Patient K., 34 years old, delivered by ambulance to the gynecology department. According to the patient, she suddenly experienced sharp abdominal pain followed by vomiting, nausea and loss of consciousness. Her last menstruation was 12 days ago and was normal. Objective: pale, lethargic, pulse 113 beats/min, blood pressure 78/40 mmHg. Abdomen painful, tense; positive signs of muscular tone; Shchetkin–Blumberg symptom positive. Vaginally: posterior fornix flattened, uterus 3 × 4 × 4 cm, mobile, painful, positive “floating uterus” sign, adnexa not palpable. Ultrasound of the pelvic organs shows free fluid with fine suspension in the Douglas pouch up to 200 cm³. Left ovary sharply painful on probe traction, indistinct contour, size 42.8 × 23.8 × 20.3 mm, volume 10.8 cm³.



Task: Which diagnostic methods should be performed first? What is the most likely diagnosis?

Answer: Ultrasound examination of the pelvic organs. Laboratory follow-up examination of the patient — blood type and Rhesus factor, complete blood count, coagulation profile, biochemical blood analysis. Ovarian apoplexy. Intra-abdominal haemorrhage. Anaemia. Haemorrhagic shock stage II. Urgent surgical treatment with simultaneous hem transfusion and treatment of shock and anaemia is required.

Clinical tasks:

Task 1.

Patient D., 24 years old. Admitted to the gynaecological department with severe cramping abdominal pain. Illness began with acute lower abdominal pain and dizziness against a background of delayed menstruation for 13 days. Nausea, vomiting and brief loss of consciousness occurred. Patient is pale, apathetic. Pulse 120 beats/min, respiration 26/min, blood pressure 80/56 mmHg, body temperature 36.8 °C. Abdomen tense and painful in the hypogastrium. Shchetkin–Blumberg sign positive.

On examination: vaginal mucosa white-pink, cervix somewhat cyanotic, dark bloody discharge. Posterior fornix flattened and very painful. Uterus anteflexed, slightly enlarged, shifted to the left, mobility limited. To the right and posterior to the uterus a dense elastic formation 8 × 6 cm, soft consistency, on the left — no peculiarities. Laboratory tests: ESR 15 mm/h, leukocytes 12 G/L, erythrocytes 2.5 T/L. Ultrasound of the pelvic organs — uterus anteflexed, midline; correct shape. Endometrium poorly delineated from the myometrium, thickness 16.7 mm, secretory type. On the left in the projection of the fallopian tube an anechoic mass with increased blood flow on colour Doppler. Free fluid 160 cm³ in the pouch of Douglas.

Tasks:

1. What is the most likely diagnosis?
2. Which diagnostic method should be performed first?

Answer: Ruptured tubal pregnancy. Haemorrhagic shock. Urgent laparoscopy with simultaneous anti-shock measures is necessary.

Test questions for self-control:

1. Methods for diagnosing ectopic pregnancy, except:

   A. Progesterone test

   B. Uterine cavity sounding

   C. Pregnancy test

D. Ultrasound

E. Bimanual examination

2. Bloody discharge from the genital tract is one of the pathognomonic symptoms of:

A. Ectopic pregnancy

B. Ovarian apoplexy

C. Beginning abortion.

D. Torsion of a cyst pedicle

E. Fibroid nodule being born.

F. Acute inflammation of the uterine appendages

3. During ultrasound of the pelvic organs in a 16-year-old girl, a round formation to the right and behind the uterus, limited in mobility, with variable wall thickness and fine suspension content was detected. Wall echogenicity low or medium. Likely diagnosis (repeated from previous section).

A. Dermoid cyst

B. Follicular cyst

C. Endometriotic cyst

D. True ovarian tumour

4. A patient complains of acute abdominal pain and fever up to 38 °C. She has known about uterine fibroids for 3 years. Signs of peritoneal irritation positively in the lower abdomen. Leukocytes 10.2 G/L, ESR 28 mm/h. On bimanual examination the body of the uterus enlarged to 8–9 weeks of pregnancy; on the anterior surface a sharply painful myomatous node 4 × 4 cm; adnexa unchanged. Ultrasound confirms a subserous myomatous node type 7 by FIGO with signs of degenerative and dystrophic changes. What is the most likely diagnosis?

A. Internal endometriosis

B. Tubo-ovarian tumour

C. Necrosis of a myomatous node

D. Acute adnexitis

Correct answers: 1 — B; 2 — C; 3 — C; 4 — C.

TOPIC 5

"FEATURES OF ULTRASOUND DIAGNOSTICS IN PATIENTS WITH INFERTILITY"

Purpose: To deepen and systematize students' knowledge of ultrasound diagnostics in patients with infertility; to introduce modern methodological approaches to the assessment of the female reproductive system; to teach the technique of folliculometry, evaluation of ovarian reserve and monitoring of ovulation; to study the sonographic manifestations of major gynaecological pathologies (polycystic ovary syndrome, endometriosis, adenomyosis, tubal factor of infertility); to form practical skills of differential-diagnostic search and interpretation of ultrasound data; and to foster in students an awareness of the medical, social and psychological significance of the problem of infertility, emphasizing the role of timely referral of patients to specialized centre's for restoration of reproductive function and the use of modern assisted reproductive technologies.

Key concepts:

1. The role and place of ultrasound examination in the comprehensive clinical-diagnostic assessment of patients with infertility.
2. Main parameters of ultrasound evaluation of the pelvic organs.
3. Technique of folliculometry and assessment of ovarian reserve.
4. Sonographic signs of multifollicular ovaries and diagnostic criteria for polycystic ovary syndrome (PCOS).
5. Ultrasound signs of adenomyosis and endometrioid ovarian cysts.
6. Ultrasound diagnosis of the tubal factor of infertility (hydrosalpinx, distal occlusion).
7. Ultrasound markers of ovulation and features of monitoring the ovulatory cycle.
8. Evaluation of the endometrium during the cycle, ultrasound criteria for readiness for implantation.
9. Plan of examination of a woman with infertility: required volume and parameters of ultrasound examination of the pelvic organs.
10. Differential-diagnostic signs of the main pathologies leading to infertility.
11. Possibilities of 3D/4D ultrasound technologies in the diagnosis of reproductive disorders.
12. Use of ultrasound in the preparation and monitoring of the effectiveness of assisted reproductive technologies.

Plan

1. Theoretical questions:

1. The role of ultrasound diagnostics in the comprehensive examination of patients with infertility.
2. Main ultrasound parameters for assessing the pelvic organs.

3. Technique of folliculometry: stages, indicators, clinical significance.
4. Ovarian reserve: concept, methods of evaluation, ultrasound signs of decrease.
5. Ultrasound criteria for polycystic ovary syndrome (PCOS).
6. Features of ultrasound diagnosis of adenomyosis.
7. Ultrasound signs of endometrioid ovarian cysts.
8. Diagnosis of the tubal factor of infertility: hydrosalpinx, distal occlusion.
9. Ultrasound markers of ovulation.
10. Changes in the endometrium under ultrasound control during the menstrual cycle.
11. Ultrasound diagnosis of congenital uterine anomalies.
12. Possibilities of 3D/4D ultrasound in reproductive medicine.
13. Ultrasound monitoring during ovulation stimulation and assisted reproductive technology (ART) programs.
14. Differential-diagnostic signs of the main pathologies leading to infertility.
15. Importance of timely referral of an infertile couple to specialized centres of reproductive medicine.

2. Questions for self-control:

1. What place do ultrasound diagnostics occupy in identifying causes of infertility?
2. What main parameters are evaluated during ultrasound of the pelvic organs?
3. What is folliculometry and what are its stages?
4. Which ultrasound criteria indicate a decrease in ovarian reserve?
5. Name the sonographic signs of polycystic ovary syndrome.
6. What are the characteristic ultrasound signs of adenomyosis and endometrioid cysts?
7. How is hydrosalpinx diagnosed on ultrasound?
8. Which ultrasound markers of ovulation are known?
9. What changes in the endometrium can be traced when monitoring the menstrual cycle?
10. What are the advantages of 3D/4D ultrasound in the study of patients with infertility?
11. What are the possibilities of ultrasound in monitoring ovulation stimulation and ART programs?
12. What is the main differential-diagnostic signs of pathologies leading to infertility?

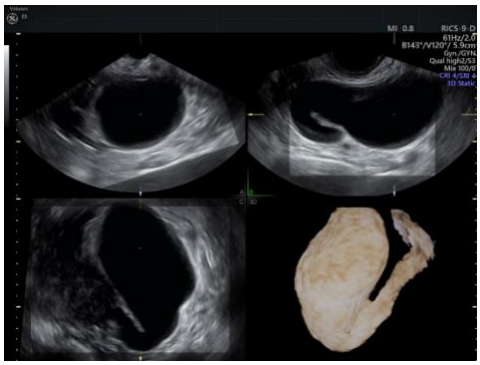
Assignments for self-study of the material:

Practical work / individual tasks:

Situational tasks:

Task 1.

1. A 32-year-old woman consulted a family physician complaining of infertility. She has regular sexual intercourse without contraception for 7 years. History: chronic bilateral adnexitis for 5 years, for which she was treated inpatient and outpatient. No previous pregnancies. Menarche at 13 years, usually regular menses, but irregular in the last 2 years. On speculum examination: cervical epithelium intact. On bimanual examination: limited uterine mobility; in the area of the right adnexa a dense elastic mass 5 × 3 cm, tender. Ultrasound of the pelvic organs — right ovary at the right margin of the uterus, size 45.2 × 26.5 × 39.5 mm, volume 24.8 cm^3, heterogeneous finely follicular echostructure containing 6–7 antral follicles. Paraovarian in projection of the right fallopian tube an anechoic oval formation with uneven contour measuring 42.7 × 28.8 mm. Husband's semen analysis: asthenospermia and oligozoospermia grade II.



Tasks:

- Establish a preliminary diagnosis.
- Draw up a plan for further examination of the patient.

Answer:

- Primary infertility, tubal-peritoneal and male factor. Right-sided hydrosalpinx.
- Ultrasound of the pelvic organs, screening for sexually transmitted infections, diagnostic laparos copy.

Task 2.

A 22-year-old woman consulted a gynaecologist complaining of absence of pregnancy for 3 years of regular sexual life without contraception.

Menstrual cycle irregular, lasting 35–50 days, menses moderate, painless. She reports no sexually transmitted infections, no pregnancies, abortions or deliveries. Somatically healthy, body mass within normal range (BMI 22 kg/m^2). To assess ovarian function, basal temperature was monitored for three

cycles. Results showed basal temperature remained 36.5–36.8 °C, with no rise above 37 °C in the second phase and no biphasic chart.

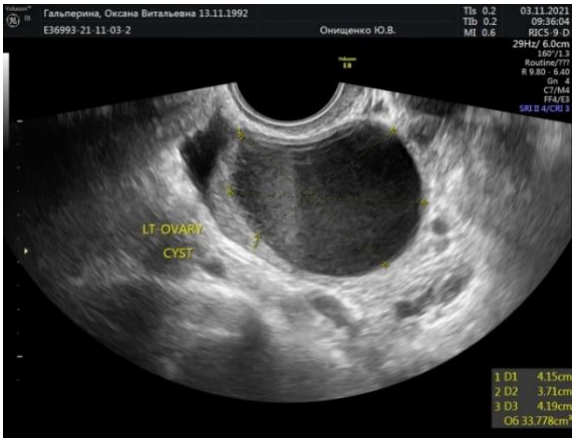
Task: Establish the diagnosis and determine further treatment tactics

Answer: The data indicate anovulatory cycles and lack of ovulation, which may be the cause of the patient's infertility. Further evaluation includes ultrasound folliculometry, determination of FSH, LH, oestradiol, progesterone, prolactin and thyroid hormones, assessment of ovarian reserve (number of antral follicles, AMH) and, if necessary, consultation with a reproductive specialist to determine indications for assisted reproductive technologies.

Clinical tasks:

Task 1.

Patient L., 27 years old, consulted a gynaecologist to plan pregnancy. Menarche at 12 years, cycle established in 4 months. Menstrual cycle 3–4 days / 29–30 days. During hysterography obstruction of the tubes at the ampullary portion was detected. Ultrasound of the pelvic organs — left ovary enlarged due to a cystic formation of mixed echostructure with fine suspension
41.5 × 37.1 × 41.9 mm, volume 33.8 cm³.



Tasks:

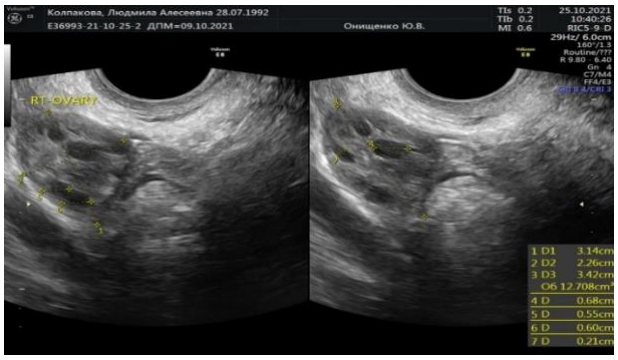
- Establish the diagnosis.
- Determine the management tactic.

Answer:

- Diagnosis: Primary infertility, tubal-peritoneal and hormonal factor. Endometriotic cyst of the right ovary.
- Tactic: operative treatment — laparoscopy.

Task 2.

A 25-year-old woman consulted a gynaecologist complaining of menstrual irregularities: irregular scant menses, delays of 3–5 months and infertility for 3 years. Menarche began at 16 years, irregular with 3–4-month delays. Sexual life since age 18, regular, one partner, no contraception. Objectively: overweight, acne, signs of hirsutism. Ultrasound of the pelvic organs: uterus anteflexio-versio, midline; correct shape, even contours; sizes: length 42.5 mm, width 33.9 mm, anteroposterior dimension 48.9 mm. Myometrium homogeneous. Right ovary closely adjacent to the right side of the uterus, even contour, size 31.4 × 22.6 × 34.2 mm, volume 12 ml, heterogeneous finely follicular echostructure containing 10–11 follicles measuring 3.9; 4.2; 5.5; 6.0; 6.8; 9.6 mm. Left ovary at the left side, enlarged 37 × 22.2 × 36.8 mm, volume 15.9 ml, heterogeneous finely follicular echostructure containing 11–12 follicles measuring 3.6; 5.2; 5.0; 5.6; 6.1 mm.



Task: Formulate a preliminary diagnosis and determine further treatment tactics

Answer: Preliminary diagnosis: Polycystic ovary syndrome. Ultrasound in dynamics, hormonal investigation (FSH, LH, prolactin, testosterone, cortisol, DHEAS).

Test questions for self-control:

1. What place does ultrasound diagnostics occupy in identifying causes of infertility?

A. Additional study without clinical significance.

B. Main screening method and diagnosis of reproductive system pathologies.

C. Used only in the presence of vaginal discharge.

D. Used only to assess uterine anomalies.

2. What is folliculometry?

A. Method for determining hormonal status.

B. Analysis of partner’s semen

C. Endometrial biopsy

D. Ultrasound monitoring of follicular growth during the cycle.

3. Which ultrasound criteria indicate a decrease in ovarian reserve?

A. Large number of follicles (> 20)

B. Presence of hydrosalpinx

C. Reduced number of antral follicles and low ovarian volume.

D. Endometrial thickening

4. Name the sonographic signs of polycystic ovary syndrome (PCOS).

A. One large dominant follicle

B. Multifollicular echostructure, increased ovarian volume, “peripheral” localization of follicles.

C. Rare follicles and ovarian atrophy

D. Hypoechoic endometrium

5. What characteristic ultrasound signs indicate adenomyosis and endometrioid cysts?

A. Hypoechoic inclusions in the muscular layer of the uterus and cystic formations in the ovaries

B. Homogeneous ovarian echostructure without inclusions

C. Cervical thickening

D. Enlarged uterine cavity.

6. How is hydrosalpinx diagnosed with ultrasound?

A. Detection of fluid in the uterine cavity

B. Visualization of a dilated tube with fluid content

C. Endometrial thickening

D. Ovarian enlargement

7. Which ultrasound markers of ovulation are known?

A. Growth of the dominant follicle and its disappearance after ovulation, increase in endometrial thickness.

B. Decrease in ovarian size

C. Appearance of cysts in the ovaries

D. Cervical thickening

8. What changes in the endometrium can be traced when monitoring the menstrual cycle?

A. Constant thickness without changes

B. Phasic changes: proliferative, secretory, preparation for implantation

C. Only thickening before ovulation.

D. Decrease after ovulation

9. What are the advantages of 3D/4D ultrasound in the study of patients with infertility?

A. Ability to visualize volume structures of the uterus and ovaries in different planes.

B. Only for pregnant women

C. Replaces folliculometry.

D. Has no clinical significance

Correct answers: 1 — B; 2 — D; 3 — C; 5 — B; 6 — A; 7 — B; 8 — A; 9 — B; 10 — A

TOPIC 6

"ULTRASOUND DIAGNOSTICS IN OBSTETRICS"

Purpose: to deepen and systematize students' knowledge of the role of ultrasound diagnostics in obstetric practice, particularly in detecting hereditary and congenital fetal pathologies, including congenital malformations (CM), chromosomal and monogenic diseases. To familiarize them with the main indications for prenatal ultrasound screenings and modern algorithms for their performance. To teach them to evaluate the ultrasound image during the examination of pregnant women, recognize ultrasound markers of congenital pathology and assess their clinical significance. To master a detailed plan for conducting prenatal screening: the first screening (11–14 weeks), the second screening (19–22 weeks) and the third screening (30–32 weeks), including key parameters and the sequence of examination. To develop practical skills for comprehensive assessment of fetal condition, preparation of the patient for examination and formulation of a report based on the ultrasound findings.

Key concepts:

1. Introduce the relevance of congenital pathology and its impact on perinatal outcomes.

2. Study the indications for prenatal ultrasound screenings and the principles of their performance.

3. Master the examination plan for the first, second and third screenings, including mandatory parameters for evaluating fetal development.

4. Study ultrasound markers of congenital pathology and learn to interpret them.

2. Develop skills in the systematic approach to assessing ultrasound results in pregnant women, formulating a conclusion and determining the need for further studies or consultations.

Plan

1. Theoretical questions:

1. The role of ultrasound diagnostics in prenatal pregnancy screening.

2. The relevance of detecting congenital pathology and its impact on perinatal outcomes.

3. The main indications for performing the first, second and third ultrasound screenings.

4. Principles for evaluating basic ultrasound parameters of the fetus at different gestational ages.

5. Ultrasound markers of chromosomal abnormalities in the first trimester (11–14 weeks).

6. Anatomical parameters of the fetus assessed at the second screening (19–22 weeks).

7. Growth and development parameters of the fetus at the third screening (30–32 weeks).

8. The main ultrasound characteristics of markers of congenital pathology: echogenicity, shape, size and location.

9. The plan for patient examination during prenatal ultrasound: a systematic approach.

10. The clinical significance of detected ultrasound deviations and the algorithm for further management of the patient.

11. The use of 3D/4D technologies in prenatal screening.

12. The capabilities of ultrasound for assessing the placenta, amniotic fluid and umbilical cord.

13. The main errors and limitations of ultrasound screening.

2. Self-control questions:

1. What role does ultrasound examination play in detecting congenital fetal pathology?

2. What are the main indications for prenatal screening in the first, second and third trimesters?

3. What are ultrasound markers of chromosomal abnormalities, and which are determined in the first trimester?

4. Which anatomical parameters of the fetus are evaluated at the second screening (19–22 weeks)?

5. What is assessed during the third screening (30–32 weeks)?

6. Which ultrasound characteristics of congenital pathology markers are important for diagnosis?

7. How to formulate a plan for examining a patient during prenatal ultrasound?

8. Which factors influence the accuracy of ultrasound screening?

9. What opportunities do 3D/4D technologies offer for assessing fetal development?

10. What actions need to be taken when suspicious ultrasound signs of congenital pathology are detected?

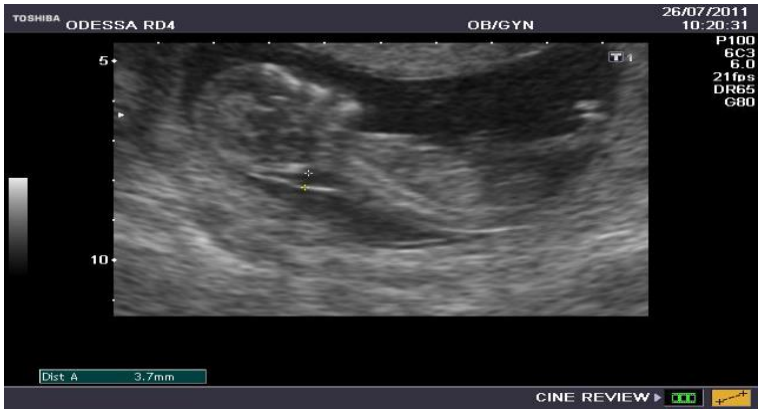
Assignments for independent study of the material:

Practical work / individual tasks:

Situational Tasks:

Task 1.

A 28-year-old patient, 12 weeks pregnant, comes for the first prenatal screening. Her menstrual cycle is regular, with no history of pathology. During ultrasound a nuchal translucency (NT) of 3.7 mm, absence of the nasal bone and an echogenic reverse flow in the ductus venosus are detected.



Tasks:

- What is the risk of chromosomal abnormalities in this case?
- What additional examinations should be prescribed to the patient?
- What clinical conclusions can be drawn based on the detected ultrasound markers?

Answer:

- High risk of trisomy 21 (Down syndrome) and other chromosomal abnormalities.
- First-trimester biochemical screening (PAPP-A, free β-HCG).
- Non-invasive prenatal testing (NIPT) or invasive diagnostics (amniocentesis, chorionic villus sampling).
- The detected markers indicate an increased risk of chromosomal pathology; further clarification and consultation with a geneticist are necessary.

Task 2.

A 30-year-old pregnant woman at 20 weeks of gestation comes for the second screening. Ultrasound showed deformation of the fetal spine, disruption of the structure of the gastrointestinal tract and decreased amniotic fluid volume.

Tasks:

- Which congenital pathologies can be suspected based on these signs?
- What additional diagnostic methods can be used to clarify the pathology?
- What further steps should the physician take regarding pregnancy management and referral of the patient?

Answer:

- Congenital spinal malformations (spina bifida, scoliosis); gastrointestinal tract defects (atresia, intestinal obstruction).
- 3D/4D ultrasound to clarify anatomy; fetal MRI in complex cases; genetic testing as indicated.
- Consultation with a perinatologist and geneticist; planning further pregnancy management and determining the timing and method of delivery.

Clinical tasks:

Task 1.

A pregnant woman, 29 years old, at 21 weeks. Ultrasound showed: an enlarged heart with ventricular hypertrophy, thickened nuchal fold, polycystic structures in both kidneys.

Tasks:

- Which diagnoses are likely in this case?
- Assign additional examinations.
- Determine the tactics of patient management.

Answer:

- Diagnosis: Congenital heart defect (ventricular hypertrophy); genetic anomalies (possible syndrome such as Down syndrome or other chromosomal disorders); congenital kidney anomalies (polycystic kidneys).

- Additional examinations: 3D/4D ultrasound to clarify the cardiac anomaly; fetal echocardiography; genetic testing (NIPT or amniocentesis).
- Further actions: Consultation with a geneticist and perinatologist; planning pregnancy management and determining the timing and method of delivery.

Task 2.

A 27-year-old pregnant woman at 31 weeks. Third screening shows intrauterine growth restriction (IUGR), reduced amniotic fluid volume, echogenic intestine, thickened placenta and pathological blood flow in the umbilical and fetal pulmonary arteries.

Tasks:

- Which pathology carries an increased risk in this case?
- Assign additional examinations.
- Determine patient management tactics.

Answer:

- IUGR due to placental insufficiency.
- Disruption of the development of the digestive organs (echogenic intestine).
- Increased risk of fetal hypoxia (pathological blood flow).
- Additional examinations: Frequent Doppler monitoring of blood flow; cardiotocography to assess fetal condition; fetal MRI in complex cases.
- Further actions: Planning premature delivery if hypoxia progresses; monitoring fetal growth and maternal condition; consultation with a neonatologist and perinatologist to prepare for delivery.

Test questions for self-control:

1. A 25-year-old pregnant woman with a prolonged pregnancy notes a decrease in abdominal size over the last week. Vaginal examination reveals almost no anterior amniotic fluid. According to ultrasound, the amniotic fluid index is 5 cm. What is the preliminary diagnosis?

A. Fetal growth retardation.

B. Prolonged pregnancy; moderate oligohydramnios.

C. Prolonged pregnancy; severe oligohydramnios.

D. Premature rupture of membranes.

2. A multiparous pregnant woman at 37 weeks is admitted complaining that she hardly feels fetal movements. History: at 11–12 weeks and 16–18 weeks she was treated in the hospital for threatened miscarriage. At 32 weeks placental insufficiency was diagnosed by ultrasound. On auscultation the fetal heartbeat is muffled, about 120 per minute. Amnioscopy shows greenish amniotic fluid. Determine the doctor's tactics:

A. Emergency delivery

B. Prolong pregnancy and conduct anti-hypoxic therapy.

C. Prolong pregnancy and determine the biophysical profile of the fetus.

D. Cardio monitoring control over a week

E. Perform amnioscopy once every 3 days.

3. Pregnant V., 23 years old. Pregnancy of 36 weeks. She is admitted with complaints of increased fetal movements that have been bothering her for 3 days. Objectively: abdominal dimensions correspond to 34 weeks of pregnancy; ultrasound conclusion: fetal measurements correspond to 34 weeks, signs of placental aging (calcifications, lacunae), amniotic fluid appears opalescent.

A. Repeat ultrasound in 2 weeks

B. Amniocentesis

C. Amnioscopy

D. Biophysical profile of the fetus, Doppler study of fetoplacental circulation.

E. Cordocentesis

4. What does echogenic fetal intestine mean?

A. A normal finding for 12 weeks' gestation

B. A potential marker of chromosomal anomaly or intrauterine infection

C. A sign of low fetal growth

D. Indicates placental hypoxia.

Correct answers: 1 — B; 2 — A; 3 — D; 4 — B

TOPIC 7

"ULTRASOUND ASSESSMENT OF CONGENITAL ANOMALY MARKERS DURING PREGNANCY SCREENING"

"Purpose: To develop students' understanding of the relevance of hereditary and congenital pathology, in particular congenital malformations (CMs), as well as chromosomal and monogenic disorders, which constitute a significant proportion of perinatal morbidity and mortality. To define and assimilate the main indications for prenatal ultrasound screenings as the leading method of early detection of fetal pathology. To master the principles of interpreting ultrasound images at different stages of pregnancy. To recognize the characteristic ultrasound features and markers of congenital anomalies during screenings. To acquire the ability to design a comprehensive examination plan for a pregnant patient, considering gestational age and the indications for conducting the first (11–14 weeks), second (19–22 weeks), and third (30–32 weeks) ultrasound screenings.

Key concepts:

1. What is prenatal screening and what are its main objectives?
2. What is the definition of ultrasound markers of congenital pathology and what is their clinical significance?
3. Which parameters are evaluated during the first screening (11–14 weeks of pregnancy)?
   - Crown–rump length (CRL)
   - Nuchal translucency (NT) thickness
   - Presence of the nasal bone
   - Blood flow in the ductus venosus
   - Fetal heart rate
4. Which examinations are performed during the second screening (19–22 weeks of pregnancy)?
5. Fetal biometric measurements (BPD, HC, AC, femur length, etc.)
6. Assessment of fetal anatomy (CNS, heart, internal organs, spine, limbs)
7. Determination of fetal sex
8. Identification of "soft markers" of chromosomal anomalies

9. Which examinations are included in the third screening (30–32 weeks of pregnancy)?

- Evaluation of fetal growth and correlation with gestational age
- Localization and degree of placental maturity
- Amniotic fluid volume
- Doppler assessment of uterine and umbilical arteries

10. What are chromosomal markers and with which syndromes are they associated?
11. Which major congenital anomalies can be diagnosed by ultrasound during pregnancy?
12. What is meant by integrated evaluation of prenatal screening results?
13. What is the diagnostic significance of Doppler studies in assessing the condition of the fetus and placenta?

Plan

1. Theoretical Questions:

1. Relevance of hereditary and congenital pathology in modern obstetrics.
2. Prenatal screening: definition, purpose, and objectives.
3. Main indications for conducting ultrasound screening in pregnant women.
4. First screening (11–14 weeks):

- Crown–rump length (CRL)
- Nuchal translucency (NT) thickness
- Presence and development of the nasal bone
- Ductus venosus and fetal cardiac activity

5. Second screening (19–22 weeks):

- Fetal biometric parameters
- Assessment of fetal anatomy (CNS, heart, internal organs, limbs)
- Soft ultrasound markers of chromosomal abnormalities

6. Third screening (30–32 weeks):

- Assessment of fetal growth and correlation with gestational age
- Localization and degree of placental maturity
- Amniotic fluid volume
- Doppler studies

7. Chromosomal ultrasound markers (Down syndrome, Edwards syndrome, Patau syndrome).
8. Congenital malformations: main echographic features (neural tube defects, omphalocele, cardiac anomalies, etc.).
9. Integration of ultrasound data with biochemical markers of pregnancy.
10. Importance of Doppler studies in diagnosing placental insufficiency and fetal hypoxia.
11. Plan for comprehensive examination of a pregnant woman depending on gestational age.
12. Algorithm of physician's actions upon detection of congenital anomaly markers.

2. Self-control questions (list of questions):

1. What is the significance of prenatal screening in modern perinatal medicine?
2. State the optimal timing for conducting the first, second, and third screenings.
3. Which ultrasound parameters are evaluated at 11–14 weeks?
4. What is nuchal translucency thickness and what is its clinical significance?
5. Which "soft markers" of chromosomal anomalies can be identified during the second screening?
6. Which pathologies are most frequently diagnosed in the third trimester using ultrasound?
7. What are the main echographic features of Down syndrome?
8. What is the role of Doppler studies in pregnant women?
9. How do structural malformations differ from "soft markers" of pathology?

10. What actions should a physician take when suspecting a congenital malformation?

Assignments for independent study of the material:

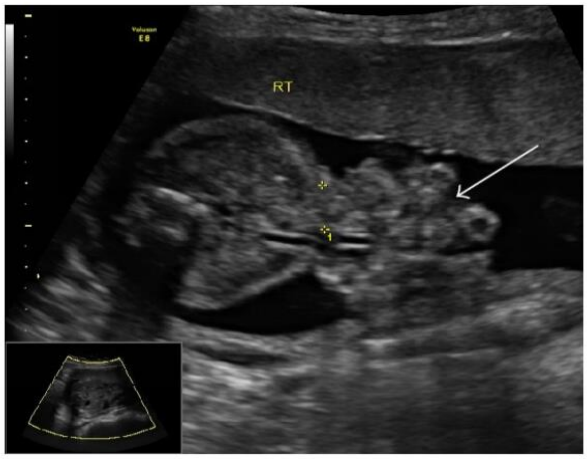
Practical work / individual tasks:

Situational Tasks:

Task 1.

A 22-year-old pregnant woman, second pregnancy, gestational age — 21 weeks. During a routine ultrasound:

- In the area of the anterior abdominal wall, to the right of the umbilicus, intestinal loops are visualized floating freely in the amniotic fluid.
- The formation has no membrane.
- The umbilical cord arises from its normal position.
- No signs of liver involvement are observed.
- Other internal organs are normally developed.



Assignment:

1. What is the most likely pathology in the fetus?
2. With which malformation should differential diagnosis be performed?
3. What should be the further management by the physician?

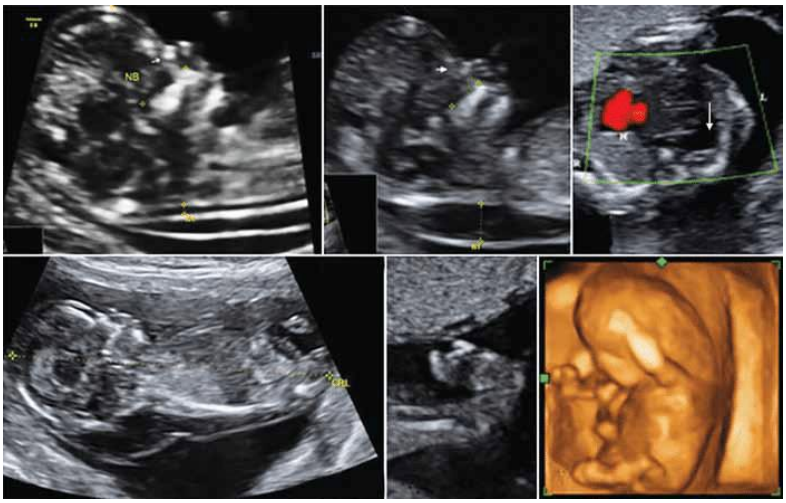
Answer:

1. The most likely pathology is **gastroschisis**, since the intestines protrude outside through a defect in the anterior abdominal wall to the right of the umbilicus, not covered by a membrane.
2. Differential diagnosis: with **omphalocele** (in omphalocele, the organs are covered by a membrane and protrude through the umbilical ring).
3. Further actions:

- Referral to a specialized perinatal clinic.
- Consultation with a neonatal surgeon.
- Assessment of the degree of bowel involvement (possible dilation, ischemia).
- Selection of optimal delivery method and planning of surgical treatment of the newborn.

Task 2.

A 33-year-old pregnant woman, second pregnancy, gestational age — 21 weeks. On second-trimester screening ultrasound: BPD, HC, AC correspond to gestational age. Femur length — 2 weeks below the norm. Hypoplasia of the nasal bone detected. An echogenic focus observed in the cardiac cavity. Other organs show no abnormalities.



Assignment:

1. Which findings are considered “soft markers” of chromosomal anomalies?
2. Which pathologies can be suspected?
3. What additional examinations should be conducted?

Answer:

1. Soft markers: hypoplasia of the nasal bone, shortening of the long bones, echogenic focus in the heart.
2. Suspected pathology: **Down syndrome (trisomy 21)**.
3. Additional investigations: biochemical screening (triple/quadruple test), consultation with a geneticist, amniocentesis if indicated.

Clinical tasks:

Task 1.

A 27-year-old pregnant woman, first pregnancy, gestational age — 20 weeks. During a routine second-trimester screening ultrasound, the following findings were revealed:

- In the area of the anterior abdominal wall of the fetus, a formation containing intestinal loops and part of the liver is visualized, covered with a thin membrane.
- The abdominal cavity is reduced in size.
- The umbilical cord arises from the top of the formation.
- Other organs show no visible structural anomalies.

Assignment:

1. What is the most likely pathology in the fetus?
2. With which malformation should differential diagnosis be carried out?
3. What further steps should the physician take?

Answer:

The most likely pathology is **omphalocele (fetal umbilical hernia)**, since abdominal organs protrude outside through a defect in the umbilical area and are covered with a membrane. Differential diagnosis: with **gastroschisis** (in gastroschisis, the defect is located to the right of the umbilicus, and the organs are not covered by a membrane). Further steps: referral of the pregnant woman to a specialized perinatal clinic; consultation with a medical geneticist (omphalocele is often associated with chromosomal anomalies — trisomy 13, 18, Beckwith–Wiedemann syndrome); consideration of amniocentesis for karyotyping; planning delivery in a facility equipped for neonatal surgery.

Task 2.

A 30-year-old pregnant woman, gestational age — 31 weeks. Third-trimester screening revealed: intrauterine growth restriction (IUGR), decreased amniotic fluid volume, echogenic bowel, thickened placenta, pathological blood flow in the umbilical and pulmonary arteries of the fetus.

Assignment:

1. What pathology is at increased risk in this case?
2. Prescribe additional investigations.
3. Determine the management strategy for the patient.

Answer:

1. IUGR due to **placental insufficiency**.
2. Disorders of gastrointestinal development (echogenic bowel).
3. Increased risk of **fetal hypoxia** (pathological blood flow).
4. Additional investigations: frequent Doppler monitoring of blood flow; cardiotocography (CTG) to assess fetal condition; fetal MRI in complex cases if indicated.
5. Further physician's actions: planning early delivery in case of progressive hypoxia; monitoring fetal growth and maternal condition; consultation with a neonatologist and perinatologist to prepare for childbirth.

Test questions for self-control:

1. What is the optimal timing for the first prenatal ultrasound screening?
   A. 8–10 weeks
   B. 11–14 weeks
   C. 15–18 weeks
   D. 19–22 weeks

2. What is assessed during the first screening (11–14 weeks)?
   A. Fetal growth and amniotic fluid volume
   B. Cardiovascular system and femur length
   C. Nuchal translucency (NT), presence of the nasal bone, blood flow through the heart
   D. Placental blood flow and lung development

3. Which ultrasound markers may indicate a high risk of trisomy 21?
   A. Increased NT, absent nasal bone, echogenic bowel

B. Polycystic kidneys and enlarged heart

C. Reduced amniotic fluid volume and IUGR

D. Increased echogenicity of pulmonary arteries?

4. Which parameters are evaluated during the second screening (19–22 weeks)?

   A. Only nuchal translucency thickness

   B. Fetal anatomy: heart, brain, spine, abdominal organs, limbs, placenta

   C. Number of antral follicles

   D. Woman's basal temperature

5. What is evaluated during the third screening (30–32 weeks)?

   A. Fetal growth and weight, position, placental status, amniotic fluid volume

   B. Only fetal cardiac anatomy

   C. Only endometrial thickness

   D. Presence of a dominant follicle

6. Which method is additional when congenital fetal pathologies are suspected?

   A. Cardiotocography (CTG)

   B. Fetal MRI

   C. Biochemical screening

   D. Doppler ultrasound.

Correct Answers: 1 – B; 2 – C; 3 – A; 4 – B; 5 – A; 6 – B.

TOPIC 8

"Ultrasound assessment of intrauterine fetal condition"

Purpose: to understand the relevance of prenatal pathology and pregnancy complications. To determine the role of ultrasound methods in the comprehensive assessment of the intrauterine fetal condition. To master the main principles and indications for ultrasound examinations at different gestational ages. To learn to interpret the main parameters of fetometry, biophysical profile and Doppler in assessing the fetal condition. To develop practical skills in identifying signs of hypoxia, intrauterine growth restriction (IUGR) and other pathological conditions.

Key concepts:

1. What is ultrasound assessment of intrauterine fetal condition and what are its tasks?
2. What basic ultrasound methods are used to assess the fetus?
3. What is fetometry and which fetal parameters are measured?
4. What is the biophysical profile of the fetus and which indicators does it include?
2. What is the role of Doppler in examining the state of the fetus and placenta?
3. Which signs of intrauterine hypoxia can be detected by ultrasound?
4. How is intrauterine growth restriction (IUGR) diagnosed by ultrasound?
5. What ultrasound criteria define oligohydramnios and polyhydramnios?
6. How is fetal anatomy assessed on ultrasound and what deviations can be detected?
7. What are modern approaches to comprehensive assessment of fetal condition in the second and third trimesters?

Plan

1. Theoretical questions:

1. What is ultrasound assessment of intrauterine fetal condition and what are its main tasks?
2. Which ultrasound methods are used to assess the fetus: fetometry, Doppler, biophysical profile?
3. Which fetometry parameters of the fetus are evaluated at different gestational ages (BPD, HC, AC, femur length)?

4. What is the fetal biophysical profile and which indicators does it include?
5. What is the role of Doppler in assessing the state of the fetus and placenta?
6. Which signs of intrauterine hypoxia can be detected by ultrasound and Doppler?
7. Which criteria of intrauterine growth restriction (IUGR) are determined on ultrasound?
8. What are the ultrasound signs of oligohydramnios and polyhydramnios?
9. What are the main indicators for assessing fetal anatomy and detecting pathologies?

2. Self-control questions (list of questions):

1. List the main methods of ultrasound assessment of the fetus.
2. Which parameters does fetometry include and what is their normal range at different gestational ages?
3. Name the indicators of the fetal biophysical profile.
4. Which signs of intrauterine hypoxia can be determined by Doppler?
5. What is the difference between assessing IUGR by absolute and relative fetometry parameters?
6. How is the amount of amniotic fluid assessed and what are its pathological variants?
7. Name the main ultrasound markers of fetal anatomical anomalies.
8. Which risk factors for perinatal complications can be detected using ultrasound?
9. What are modern approaches to comprehensive assessment of fetal condition in the second–third trimester?
10. What actions should the physician take when signs of IUGR or fetal hypoxia are detected?

Assignments for independent study of the material:

Practical works / individual tasks:

Situational tasks:

Task 1.

A 28-year-old primigravida at 34 weeks presents for a routine check-up. She has no complaints about her general state and feels fetal movements but notes that movements are less intense than before.

Obstetric status: uterus in normal tone, fundal height (FH) 30 cm, abdominal circumference 88 cm. Fetal position longitudinal, cephalic presentation, fetal heartbeat 138 beats per minute, rhythmic, heard on the right near the umbilicus.

Complete blood count: Hb — 102 g/L, leukocytes — 7×10^9/L, ESR — 14 mm/h. Urinalysis: specific gravity — 1.015, protein — 0.05 g/L, leukocytes 0–2 per field of view, erythrocytes 1 per field of view.

Ultrasound: fetal weight 1800 g, below normal for 34 weeks; placenta — grade I–II maturity, amniotic fluid volume normal, umbilical artery/systolic peak velocity (or diameter ratio) elevated.

Tasks:

1. Determine the diagnosis.
2. List the necessary examinations and management measures for the pregnant woman.

Answer:

1. Diagnosis: Primigravida, 34 weeks gestation. Intrauterine growth restriction (IUGR) of moderate severity.
2. Necessary examinations and management:
    - Repeat ultrasound in 1–2 weeks to assess fetal growth and Doppler blood flow.
    - CTG (cardiotocography) to assess fetal condition.
    - Evaluation of the placenta and amniotic fluid.
    - Maternal laboratory studies: complete blood count and urinalysis, biochemistry (glucose, protein, creatinine).
    - Monitoring blood pressure and edema, assessment of risk for preeclampsia.
    - Consultation with an obstetrician-gynaecologist regarding optimal timing and method of delivery.

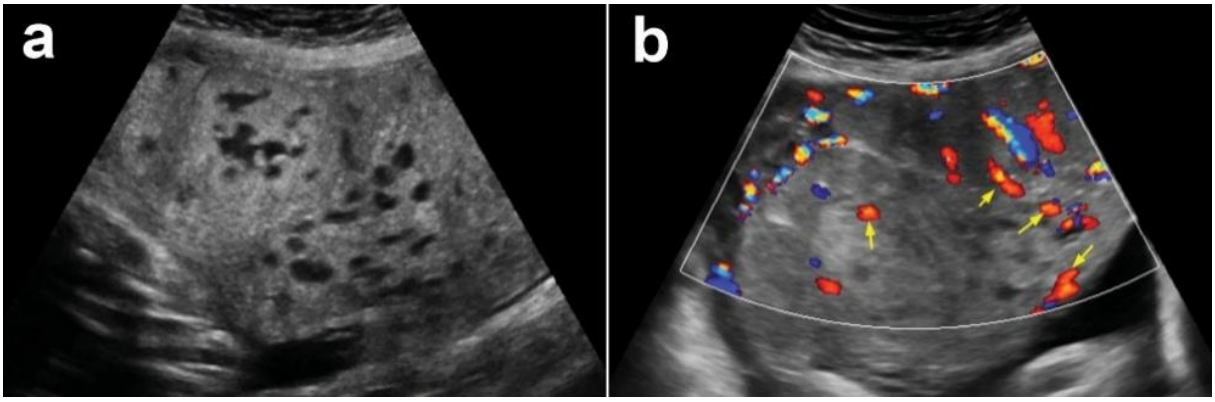
Task 2.

A 29-year-old pregnant woman at 32 weeks comes for a routine visit. She has no complaints about her general state, feels fetal movements but notes that they have become less active.

Obstetric status: uterus in normal tone, FH 32 cm, abdominal circumference 94 cm. Fetal position longitudinal, cephalic presentation, fetal heart rate 140 beats per minute, rhythmic, heard near the umbilicus.

Complete blood count: Hb — 108 g/L, leukocytes — 7×10^9/L, ESR — 15 mm/h.
Urinalysis: specific gravity — 1.015, protein — 0.05 g/L, leukocytes 0–2 per field of view.

Ultrasound of the placenta and fetus: placenta located on the posterior wall of the uterus, thickness 35 mm, multiple cystic inclusions from 5 to 25 mm connected with placental vessels; amniotic fluid normal; fetal weight corresponds to 30–31 weeks; blood flow in the umbilical arteries and uteroplacental circulation partially reduced (moderate increase in the resistance index).



Tasks:

1. Which pathology can be suspected?

2. Which additional examinations should be performed?

Answer:

1. Diagnosis: Primigravida, 32 weeks. Multiple cystic inclusions in the placenta (placental dysplasia/cystic lesions of the placenta) accompanied by partial disruption of blood flow and fetal growth restriction.

2. Necessary examinations and management:

- Repeat ultrasound and Doppler in 1–2 weeks to monitor fetal growth and placental status.
- CTG to assess fetal condition and movement activity.
- Monitoring of fundal height, abdominal circumference and maternal condition.
- Laboratory tests: complete blood count, biochemistry (glucose, protein), urinalysis.
- Consultation with an obstetrician-gynaecologist regarding the possibility of preterm delivery if fetal condition deteriorates.

- In case of significant disturbance of blood flow and growth restriction — possible planned early delivery.

Clinical tasks:

Case 1.

A primigravida is referred to the maternity department by her antenatal clinic. She has been under dispensary supervision for 10 weeks. First pregnancy, 32 weeks, no complaints. Obstetric status: uterus in normal tone, corresponds to gestational age, abdominal circumference 96 cm, fundal height 32 cm. Fetal position longitudinal, head palpated above the pelvic inlet. Fetal heartbeats clear, rhythmic, 142 beats per minute, heard on the right near the umbilicus. Fetal movements are felt well. Complete blood count: Hb — 108 g/L, leukocytes 7×10^9/L, ESR — 12 mm/h. Urinalysis: specific gravity — 1.015, protein — 0.033 g/L, leukocytes 0–2 per field of view, erythrocytes 1–2 per field of view.

Tasks: Determine the diagnosis. Indicate the list of examinations for the pregnant woman.

Answer: First pregnancy, 32 weeks. Longitudinal position of the fetus, cephalic presentation, second position, anterior variety. Necessary examinations: examination and palpation of the mammary glands; examination of the lower limbs for varicose veins; auscultation of the fetal heart rate; measure blood pressure, pulse, body temperature, fundal height with data entry into the gravidogram; routine urinalysis or rapid test for protein, blood test for antibodies if Rh negative. The timing of ultrasound is determined individually.

Test questions for self-control:

1. What is the optimal timing for the first prenatal ultrasound screening?

A. 8–10 weeks

B. 11–14 weeks

C. 15–18 weeks

D. 19–22 weeks

2. Which parameter is evaluated by ultrasound to determine fetal brain development in the second trimester?

A. Cervical length

B. Biparietal diameter (BPD)

C. Femur length

D. Fundal height

3. Which ultrasound method is most informative for assessing blood flow in the umbilical cord and placenta?

A. 2D ultrasound

B. Doppler study

C. 3D ultrasound

D. Fetal echocardiography

4. Which fetal presentation is considered normal before delivery?

A. Transverse

B. Oblique

C. Longitudinal with cephalic presentation

D. Abnormal

5. Which fetal heart rate is considered normal in the third trimester?

A. 100–110 beats per minute

B. 120–160 beats per minute

C. 170–190 beats per minute

D. 80–100 beats per minute

6. For the diagnosis of intrauterine growth restriction (IUGR) ultrasound allows assessment of:

A. Only fetal weight

B. Fetal size, umbilical blood flow, placental status

C. Only fetal heart rate

D. Only fetal position

7. Which ultrasound examination is recommended for detecting fetal heart anomalies?

A. Standard screening 2D ultrasound

B. Fetal echocardiography

C. Doppler study of uteroplacental blood flow

D. 3D ultrasound of the limbs

8. Multiple cystic inclusions in the placenta on ultrasound may indicate:

A. Normal placenta

B. Placental pathology, risk of IUGR

C. Increased fetal activity

D. Premature placental abruption

9. Which index is evaluated to determine the amount of amniotic fluid?

A. Femur length

B. Amniotic fluid index (AFI)

C. Umbilical cord diameter

D. Fundal height

10. When is it recommended to perform the third prenatal ultrasound screening?

A. 11–14 weeks

B. 18–22 weeks

C. 30–34 weeks

D. 36–38 weeks

Correct answers: 1 — B; 2 — B; 3 — B; 4 — C; 5 — B; 6 — B; 7 — B; 8 — B; 9 — B; 10 — C

FORMS OF CONTROL AND ASSESSMENT METHODS (INCLUDING CRITERIA FOR EVALUATING LEARNING OUTCOMES)

Current control: oral examination, assessment of practical skills, solving situational clinical problems, assessment of activity in the classroom.

Evaluation of the current educational activity in a practical lesson :

1. Evaluation of theoretical knowledge on the subject of the lesson:
   - methods: survey, solving a situational clinical problem
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2 .
2. Evaluation of practical skills and manipulations on the subject of the lesson:
   - methods: assessment of the correctness of the performance of practical skills
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2.
3. Evaluation of work with patients on the subject of the lesson:
   - methods: assessment of: a) communication skills of communicating with the patient, b) the correctness of prescribing and evaluating laboratory and instrumental studies, c) compliance with the differential diagnosis algorithm, d) substantiation of the clinical diagnosis, e) drawing up a treatment plan;
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2 .

The grade for one practical session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

CURRENT EVALUATION CRITERIA IN PRACTICAL TRAINING

«5»	The student is fluent in the material, takes an active part in discussing and solving a situational clinical problem, confidently demonstrates practical skills during the examination of a sick child and interpretation of clinical, laboratory and instrumental studies, expresses his opinion on the topic, demonstrates clinical thinking.
«4»	The student is well versed in the material, participates in the discussion and solution of situational clinical problems, demonstrates practical skills during the examination of a sick child and interpretation of clinical, laboratory and instrumental studies with some errors, expresses his opinion on the topic, demonstrates clinical thinking.
«3»	The student does not have enough material, uncertainly participates in the discussion and solution of the situational clinical problem, demonstrates practical skills during the examination of a sick child and interpretation of clinical, laboratory and instrumental studies with significant errors.
«2»	The student does not have the material, does not participate in the discussion and solution of the situational clinical problem, does not demonstrate practical skills during the examination of a sick child and the interpretation of clinical, laboratory and instrumental studies.

RECOMMENDED LITERATURE

Primary:

1. Obstetrics and Gynecology: in two volumes. – Volume 2. Gynecology: textbook (HEI III–IV accreditation level) / ed. V.I. Hryshchenko, M.O. Shcherbyna. – 3rd ed., revised. – 2020. – 376 pp.
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3. Oxford Textbook of Obstetrics and Gynecology / S. Arulkumaran, W. Ledger, L. Denny, S. Doumouchtsis. – Oxford University Press, 2020. – 928 pp.
4. Boiko O.M., Lytvynenko V.V. Ultrasound diagnostics in obstetrics and gynecology: practical manual. – Kharkiv, 2022. – 280 pp.
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Supplementary:

1. Situational problems in gynecology: study guide. / I.Z. Hladchuk et al. – Vinnytsia: Nilan-LTD, 2018. – 164 pp.
2. Clinical tasks in obstetrics and gynecology for IV–VI year students (Parts I & II). / O.O. Korchynska, N.Yu. Bisaha; ed. V.A. Maliar. – Uzhhorod: Lira, 2019. – 119 pp.
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