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CLINICAL AND DIAGNOSTIC CHARACTERISTICS OF OVARIAN CYSTS

Kamolova F. E., Buvayeva D.K.,
Komilova U.M., Tursunov M.V.,
Ismoilova D. O., Raximova A. A.
4th-year students of Kimyo International University in Tashkent, Uzbekistan
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Abstract

Cystic formations of the ovaries have become an increasingly common concern in everyday gynecological practice. Their early detection matters a great deal, since not every cyst regresses spontaneously, and those that persist may compromise the functional ovarian tissue and, in turn, the organ itself. The present article summarizes current data on ovarian cysts. Russian-language sources were collected and analyzed through the cyberleninka.ru and eLIBRARY databases, together with international publications indexed in Scopus, for the years 2020–2025.

Keywords

Ovarian cysts, follicular, endometrioid, corpus luteum, oocyte, diagnosis and treatment.

Introduction

Cystic ovarian lesions of varying types are reported in roughly 7.8% of women of reproductive age and somewhere between 2.5% and 18% of postmenopausal patients [1].

By location, ovarian cysts are described as left-sided, right-sided, or bilateral when both ovaries are involved at once. Structurally, they may be unicameral — a single cavity without internal divisions — or multicameral, partitioned into several compartments.

Size matters too. Small cysts (up to about 2.5 cm) are usually picked up at an early stage, when the lesion is still tiny and lacks a stalk. Larger cysts (over 5 cm) develop as fluid continues to accumulate inside the capsule; with time, a stalk forms and the whole structure begins to look almost mushroom-shaped.

A separate group worth mentioning is the so-called retention cysts. These only resemble true tumors externally — in reality they are simple cavities that grow by stretching as fluid collects inside, without any actual proliferation of tissue. Retention cysts very rarely undergo malignant transformation. The main types include:

- **Follicular cysts**, which account for roughly 73% of all retention cysts. They typically develop on the background of mild hormonal disturbances. Normally, an oocyte matures within the follicle, the follicle ruptures, and the egg moves into the fallopian tube. When this rupture fails to occur, the egg stays trapped, and a cyst eventually forms in place of the unruptured follicle. When several such cysts form simultaneously, the picture corresponds to polycystic ovary syndrome.
- **Corpus luteum (luteal) cysts**. After ovulation, the ruptured follicle is replaced by the corpus luteum — a temporary endocrine gland producing progesterone and preparing the body for a possible pregnancy. If conception does not happen, the corpus luteum normally regresses and menstruation begins. Sometimes, however, regression fails and a cyst develops in its place.
- **Endometrioid cysts** are linked to endometriosis and contain a thick, brownish fluid — essentially old menstrual blood. The endometrium is the inner uterine lining where a fertilized egg would implant; under estrogen influence in the first half of the cycle, it thickens, while a follicle matures in the ovary. If fertilization does not take place, hormone levels fall and the upper layer of the endometrium is shed. With each new cycle, the lining regenerates. When hormonal regulation breaks down, endometrial tissue may

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grow outside the uterus and invade other organs — this is endometriosis. Once such tissue settles on the ovarian surface, it may form a capsule that fills with blood during menstruation. Over time the trapped blood thickens and darkens, which is why these lesions are commonly called "chocolate cysts."

- **Theca-lutein cysts** arise from follicles exposed to abnormally high levels of human chorionic gonadotropin (hCG), as seen in molar pregnancy or in choriocarcinoma. In most cases they are bilateral.
- **Paraovarian cysts** originate from the paraovarium — a rudimentary structure made up of small, non-functional ducts located between the ovary and the fallopian tube. Fluid accumulates within one of these ducts, producing a cyst that usually has a single chamber.

Because follicular and luteal cysts both result from disruption of the normal ovulation process, they are also described as functional cysts. As a rule, they regress on their own within one to three menstrual cycles. Still, this is not guaranteed, and the patient should remain under medical observation throughout this period. Should bleeding occur into the cavity, the lesion turns into a hemorrhagic cyst filled with blood or clots, which carries a real risk of rupture [2].

Objective

To outline the diagnostic features of ovarian cysts in girls [3].

Materials and Methods

A total of 167 female patients of different ages were included in one of the studies reviewed: 2 patients (1%) from birth to 7 years, 13 (8%) aged 8–12 years, and 152 (91%) aged 13–18 years [3].

Results and Discussion

When the girls were grouped by age at menarche, the distribution looked as follows: 9 years — 2 patients, 10 years — 5, 11 years — 42, 12 years — 62, 13 years — 28, 14 years — 14, 15 years — 6, and 16 years — 1. On admission, body mass index was within the normal range in 61% (102 patients), elevated in 17% (29), and reduced in 22% (36). The most frequent finding was a hemorrhagic cyst, identified in 83 girls (49%), followed by follicular cysts in 44 (26%), paraovarian cysts in 28 (16%), dermoid cysts in 9 (5%), corpus luteum cysts in 5 (3%), serous cystadenomas in 1 (0.5%), and a cystic-solid mass of unspecified origin (juvenile granulosa cell tumor) in 1 (0.5%). Eleven patients required emergency admission for complications: 9 girls had a ruptured cyst wall (5 hemorrhagic, 4 follicular), and 2 presented with torsion of paraovarian cysts (one of them with bilateral involvement). The age distribution of these emergency cases was as follows: 11 years — 1 (9%), 12 years — 1 (9%), 13 years — 1 (9%), 15 years — 1 (9%), 16 years — 5 (46%), and 17 years — 2 (18%). By side, 6 girls had left-sided lesions, 4 right-sided, and one had simultaneous bilateral torsion [3].

Among the earliest signs suggesting an ovarian cyst are dull lower abdominal pain accompanied by a feeling of pressure or fullness from within. Irregular and painful menstruation that arrives later than expected is one of the more typical complaints. An enlarged or distended abdomen may also be a clue [5].

Other clinical manifestations that may occur include:

- sharp, sudden lower abdominal pain during intercourse or after physical exertion;
- increased urinary frequency;
- weight gain in some cases;
- nausea and vomiting;
- fever rising to 38–39°C;
- tenderness and tension of the anterior abdominal wall;

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• tachycardia.

That said, an ovarian cyst can develop with no symptoms whatsoever. This makes self-diagnosis essentially impossible — most cysts are picked up incidentally during a routine ultrasound. Regular gynecological visits and pelvic ultrasounds therefore remain the cornerstone of early detection.

The main diagnostic tools used in clinical practice are:

• A gynecological examination, during which the specialist evaluates lower abdominal tenderness and looks for enlargement of the adnexa.

• Ultrasound, especially with a transvaginal probe, which is the most informative single method for identifying ovarian cysts.

• Posterior vaginal wall puncture, which helps determine whether free blood or fluid is present in the abdominal cavity. It is most useful in complicated cases.

• Laparoscopy, performed under general anesthesia and without skin incisions. It is indicated when cyst rupture or torsion of the stalk is suspected, and it allows both diagnosis and immediate surgical treatment when needed.

• Computed tomography (CT), which helps to differentiate a cyst from other ovarian masses.

• Complete blood and urine tests, used to assess possible blood loss and inflammatory response.

• Tumor marker testing (CA-125).

• A pregnancy test, mainly to rule out ectopic pregnancy [6].

The pathological classification of cystic lesions was first established on the basis of ultrasound findings. On sonograms, follicular cysts most often appeared as round, less commonly oval, lesions positioned lateral or posterior to the uterus. In a number of cases they were detected above the uterine fundus, closer to one of the cornua. The inner contour of the cysts was even and smooth. In our own observations, the thickness of the follicular cyst capsule ranged between 1 and 4 mm. Internally, follicular cysts were generally homogeneous and anechoic (78.7%). Cyst diameter varied from 2.5 to 11 cm, although in the overwhelming majority of cases it fell within the 3–8 cm range. Most cysts were solitary; only on rare occasions did we see two cysts in one ovary or one cyst in each ovary at the same time. Hemorrhage into the cavity was occasionally observed, and when this happened, the internal architecture of the cyst began to resemble that of a corpus luteum cyst (21.3%) [4].

Corpus luteum cysts, in turn, were predominantly located lateral and posterior to the uterus. Their walls were noticeably thicker, in the range of 2–6 mm, and the cysts themselves measured between 3 and 6 cm. On transvaginal scans they appeared as round, single-chambered structures sitting in the lateral pelvic regions, with smooth inner and outer contours and homogeneous contents in 27.8% of cases. The remaining 72.2% of patients with corpus luteum cysts showed heterogeneous internal contents [4].

The diagnosis of a paraovarian cyst rested on the visualization of a thin-walled, high-positioned cystic mass together with both ovaries. These cysts were typically located lateral and anterior to the uterus. In our series, paraovarian cysts measured 3 to 12 cm, with a capsule thickness of 2–6 mm. Heterogeneous internal contents were observed in 25% of patients, while the remaining 75% had homogeneous contents. Doppler imaging revealed blood flow within the cyst capsule in 9 patients of the main group with corpus luteum cysts; in all of these, the duration of the disease did not exceed 5–6 months. With follicular cysts, we found virtually no detectable blood flow in the capsule, except for occasional faint, low-intensity signals [4].

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Treatment

Treatment is tailored to the type and severity of the cyst, and may be either conservative or surgical [6].

In conservative management, monophasic and biphasic oral contraceptives are the most widely used agents for uncomplicated cysts. Vitamins A, E, B1, B6, and K, along with ascorbic acid, are commonly added to the regimen. For overweight patients, dietary correction, therapeutic physical activity, and balneotherapy are also advised. When conservative therapy fails to deliver results, surgical treatment becomes the next step [7].

Surgery is generally indicated for dermoid, endometrioid, and mucinous cysts. These procedures may be carried out either through an open laparotomy or, more commonly today, by laparoscopy [6].

Conclusion

Ovarian cysts remain one of the more demanding issues in modern gynecology. They are encountered fairly often, may stay silent for long periods, and can give rise to serious complications when diagnosis is delayed. Ultrasound continues to be the leading diagnostic tool, providing reliable information about the type, size, and structure of the lesion. Identifying cysts at an early stage is essential — both for choosing an appropriate treatment plan and for protecting the reproductive health of the patient.

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