

Step in the Diagnosis and Treatment of Ovarian Cysts in Indonesian Primary Healthcare Facilities

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ABSTRACT

Ovarian cysts are fluid-filled structures that form in or on the ovaries. In Indonesia (2015), there were 23,400 cases of ovarian cysts, with a death toll of 13,900 people. The difficulty of early detection causes most patients to be diagnosed at an advanced stage. This underlines the importance of its identification, especially in primary healthcare facilities as the frontline of the healthcare system. This article discusses the diagnosis and initial treatment of ovarian cysts in primary healthcare facilities in Indonesia. This article is a literature review composed through scientific paper and journal searching using the appropriate keywords. The inclusion criterias are journal articles, book chapters, or official reports from verified and recognized national or international organizations in English or Bahasa Indonesia. Through literature research, it was found that a comprehensive history, physical examination, and supporting investigations are required to diagnose ovarian cyst. Examination should include vital signs, lymph node assessment, chest and abdominal examination, gynecological investigation (speculum, vaginal touche), and retrovaginal examination. The imaging modality of choice for ovarian cysts is transvaginal ultrasonography (USG). In primary care settings, transabdominal ultrasound may be used as an alternative. In primary care settings, management of ovarian cysts is limited to recognizing and suspecting ovarian cysts. In cases suspected to be benign, observation of the development of the cyst is required. Once an ovarian cyst is suspected to be malignant, a referral is required.

Keywords: Ovarian cysts, diagnosis, treatment, primary health care, Indonesia.

INTRODUCTION

The ovaries are a pair of organ that have an important function in human reproduction. Disorders of the ovaries may cause various problems related to the ovum, which can lead to infertility. One of the disorders that can occurs in the ovaries is an ovarian cyst.[1] Ovarian cysts

are fluid-filled structures that form in or on the ovaries. Ovarian cysts can lead to several different complications, including rupture, torsion, and hemorrhage.[2]

The incidence of ovarian cyst in Indonesia in the year 2015 was 23,400 cases, with a death toll of 13,900 people. The high mortality rate caused by this disease is thought to be due to the fact that the disease tends to have no symptom and does not cause complaints, making it difficult to detect. The difficulty of early detection causes approximately 60%-70% of patients to be diagnosed at an advanced stage.

Around 85% of ovarian cyst cases are benign. However, it is possible for ovarian cysts to progress to malignancy.[3] This problem underlines the importance of being able to identify this disease in health facilities, especially primary health care facilities as the frontline of the health care system.[4]

In Indonesia, primary healthcare facilities have a function to provide community and individual health services, which consist of health promotion, screening and early diagnosis of non-communicable diseases, one of which is ovarian cysts.[5] This article discusses the diagnosis and initial treatment of ovarian cysts in primary health care facilities in Indonesia.

METHODS

Literature research was done from 23rd of May 2023 to 13th of June 2023 through three online scientific journal databases, namely ScienceDirect, PubMed, and ResearchGate. The keywords used in the search are *"ovarian cyst", "ovarian mass", "ovarian malignancy", "diagnosis", "anamnesis", "patient history", "clinical examination", "physical examination", "supporting examination", "imaging", "ultrasonography", "treatment", "initial management", "primary health care",* and *"Indonesia"* with the use of boolean operators such as "AND" and "OR". The inclusion criterias for this literature review are: (1) Journal articles, book chapters, or official reports from verified and recognized national or international organizations; (2) studies in English or Bahasa Indonesia. After literature research was concluded, screening of the studies was done to obtain the 31 main references. All of the obtained studies have been critically appraised based on their validity, importance, and applicability.

OVERVIEW OF OVARIAN CYSTS

Definition

Ovarian cysts may be defined as any abnormal tissue growth in the shape of fluid-filled sacs in or on the surface of an ovary.[6] It is a common gynecological condition, which may affect women of all ages. Ovarian cysts may be benign or malignant, most being benign tumors found in women of reproductive age.[2, 7]

Etiology

Ovarian cysts may be develop from a range of different causes, from physiologically normal processes to malignancy.[8] The most common cause being physiological, with cysts forming as a result of the normal menstrual cycle and resolving spontaneously within several months. Other causes trigger different types of cysts, including hormonal imbalances, endometriosis, polycystic ovary syndrome (PCOS), and ovarian cancer.[2]

Epidemiology

The specific prevalence of ovarian cysts is not fully known at the moment, as most cases are suspected to be asymptomatic and unreported, causing a difficulty in the registry of the disease. In general, around 4% of women are expected to be admitted to the hospital for symptoms relating to ovarian cysts by the age of 65 years.[2, 9] A survey on 33,739 premenopausal and postmenopausal women found an adnexal cyst on 46.7% of the subjects through transvaginal ultrasound. On the subsequent ultrasounds, 63.2% had shown signs of resolution.[10, 11]

Most of ovarian cysts are found to be benign, although neoplasms such as mature cystic teratomas or dermoids make up around 10% of all cases. Ovarian cysts occur quite frequently in infants, approximately in 30% of infants and fetuses.[12] In Indonesia, ovarian cancer is the third most common cancer in women, with 14.896 (7%) cases occurring in 2020. This malignancy had caused 9.581 deaths in Indonesia during the year 2020.[13]

Risk Factors

There are some risk factors relating to ovarian cyst formation, namely age[14, 15], hormonal imbalance[8, 16], tamoxifen use[7], pregnancy[17], maternal gonadotropins[18], severe pelvic infection, tubal ligation[19], smoking[20], and previous ovarian cysts. The risk of developing an ovarian cyst is higher in women within the reproductive age range. On the other hand, higher risk for malignancy is found in post-menopausal women.[14, 15] Hormonal imbalances include hypothyroidism and the use of ovulation induction agents such as gonadotropins, clomiphene, or letrozole that may cause cyst development as a part of ovarian hyperstimulation syndrome.[8, 16] Usage of tamoxifen, an antiestrogen used in the treatment of breast cancer, might give rise to the formation of an ovarian cyst.[7] In pregnancy, ovarian cyst may be influenced by level of human chorionic gonadotropin (hCG). Thus, it is most often found to have formed in the second trimester when hCG level peaks.[17] Maternal gonadotropins might cause transplacental effects and trigger the development of an ovarian cyst in the fetus.[18]

Classification and Pathophysiology

The classification of ovarian cysts is made based on their different pathophysiology. Ovarian cysts may be grouped into functional cysts, theca lutein cysts, polycystic ovary syndrome, and neoplastic cysts.

Functional cysts include follicular and corpus luteal cysts, which arise as a result of the normal menstrual cycle. Follicular cysts may develop in the follicular phase due to an absence of release of the ovum caused by superfluous FSH stimulation or a lack of LH surge before ovulation. Follicular cysts are usually smooth, thin-walled, unilocular, and larger than 2.5 cm in diameter. Corpus luteal cysts occur in the absence of corpus luteum dissolution, such as seen in pregnancies. It is physiologically expected to find corpus luteal cysts in all cases of pregnancies and resolution usually occurs by the end of the first trimester. Corpus luteal cysts are usually thick-walled, may be complex or simple, contain internal debris, and may grow to more than 3 cm in diameter. Both of these types of functional cysts may develop into hemorrhagic cysts, although they are most often asymptomatic and may resolve without treatment.[21]

Theca lutein cysts are luteinized follicle cysts which were formed due to the overstimulation of hCG. This type of cyst may be found in pregnant women, women with multiple gestation, gestational trophoblastic disease, and ovarian hyperstimulation.[2]

Polycystic ovary syndrome (PCOS) is characterized by enlarged ovarian with multiple follicular cysts. PCOS is caused by excess androgen hormones which cause the enlargement of ovaries and cysts formation. This condition is associated with diabetes mellitus and cardiovascular disease, and found in 5-10% of women of reproductive age. PCOS is one of the primary causes of infertility.[22]

Neoplastic cysts develop due to an abnormal overgrowth of ovarian cells, namely the surface epithelium, stroma, or germ cells. These masses may be benign or malignant. Malignant cysts may form from any ovarian subtypes, although there was found to be a clear preference for epithelial cysts. Malignancies arising from the surface epithelial comprise of serous carcinoma, mucinous carcinoma, endometrioid carcinoma, clear cell carcinoma, and malignant Brenner tumor. Malignancies arising from the germ cells include immature teratoma, endodermal sinus tumor, embryonal carcinoma, and polyembryoma.[2] Benign dermoid cysts and mature cystic teratomas develop from all three differentiated germ layers (ectoderm, mesoderm, and endoderm).[23, 24] Endometriomas, the extrauterine growth of endometrial glands and stroma, are also often found in the ovaries.[25, 26]

OVARIAN CYSTS DIAGNOSIS IN PRIMARY HEALTH CARE FACILITIES

In most cases, ovarian cysts are accidentally discovered from ultrasound imaging. Benign ovarian cysts are often asymptomatic and therefore difficult to recognize from history alone. However, in suspected malignant cysts, the condition may present with nonspecific complaints such as abdominal lump, excessive or irregular menstrual bleeding, and abdominal distension. A comprehensive history, physical examination, and supporting investigations are required to diagnose ovarian cyst.[27]

Anamnesis

Anamnesis is a communication activity conducted between the doctor as examiner and the patient, which aims to obtain information about the disease. In the context of ovarian cysts, anamnesis can help find information about symptoms, risk factors, and protective factors, which in turn helps in the diagnosis of ovarian cysts.[27, 28]

Symtoms:

Symptoms of ovarian cysts include complaints of abdominal distension (feeling full), loss of appetite, pelvic pain, abdominal pain, and increased urination (urgency-type incontinence that occurs at least 12 times per month). The pain is usually unilateral and there is often a feeling of pressure in the lower abdomen. The pain may be intermittent or constant and may be sharp or dull in characteristics. If the patient presents with severe pain, complications such as ovarian cyst rupture or ovarian torsion may be suspected.[2] The patient may also complain of a progressively enlarging lump in the lower abdomen.[28] Other symptoms that are important to note include unexplained weight loss, fatigue with disabling qualities, and problems with bowel movements.[28]

Risk Factors:

Risk factors for ovarian cysts include a personal or family history of breast, uterine, colon or ovarian cancer including hereditary cancer syndromes (BRCA gene mutations or Lynch syndrome). In addition, there are risks such as infertility treatment (e.g. gonadotropins),

tamoxifen use, pregnancy (usually in the second trimester), hypothyroidism, maternal gonadotropins, smoking and tubal ligations.[28]

In premenopausal women, the risk of ovarian cysts is low. However, as high as 21% of postmenopausal women may have an ovarian cyst. The risk of malignancy in unilocular ovarian cysts in premenopausal women is low at 0.1%, but findings of a mix between solid and cystic mass on ultrasound increase the risk of malignancy to 17%.[2,28]

Protective Factors:

In addition to risk factors, protective factors of ovarian cysts also need to be considered. A history of previous pregnancy and breastfeeding provides a 50% reduction in risk. It is thought that current use of the combined oral contraceptive pill also provides protection.[27, 28]

Physical Examination

Examination in the presence of a suspected adnexal mass such as an ovarian cyst should include vital signs and general assessment. The cervical, supraclavicular, axillary, and inguinal lymph nodes should be palpated. Chest auscultation should be performed to evaluate for pleural effusion. Detailed abdominal examination are necessary to be performed to assess for ascites, masses, tenderness, or hepatosplenomegaly.[29]

In women with pelvic or lower abdominal symptoms and strong suspicion of ovarian cysts, gynecological examination such as speculum examination and vaginal touche with bimanual palpation method can be performed to determine the location, shape (regular or irregular), size, consistency, degree of tenderness, tenderness, and mobility of the uterus and adnexa.

This method is highly dependent on the anatomy of the patient's body and the experience of the provider. Therefore, pelvic examination has limited ability to diagnose ovarian cysts. Rectovaginal examination may reveal tenderness or nodularity of the uterosacral ligaments.[28, 29]

Supporting Examination

The primary imaging modality of choice for ovarian cysts is transvaginal ultrasonography (USG). However, in primary care settings, transabdominal ultrasound may act as the alternative choice. Normal ovarian ultrasound size is 20 cm³ in women of childbearing age and 10 cm³ in menopausal women. In addition to size, ultrasound may investigate the mass's composition, papillary shape, presence or absence of fluid in the pelvis, and lateralization. Ultrasound findings are categorized according to International Ovarian Tumor Analysis (IOTA).[30, 31]

In the IOTA category, suspicion of a benign mass is had for cases with unilocular cyst, presence of solid component (with the largest component being less than 7 mm in size), presence of acoustic shadow, smooth multilocular tumor with the largest diameter <100 mm, and no blood flow.[30, 31]

On supporting examination, malignant irregular solid tumor, ascites, at least four papillary structures, irregular multilocular solid tumor with the largest diameter ≥100 mm, strong blood flow.[30, 31]

OVARIAN CYSTS MANAGEMENT IN PRIMARY HEALTH CARE FACILITIES

In primary care settings, management of ovarian cysts is limited to recognizing and suspecting ovarian cysts. Once an ovarian cyst is suspected to be malignant, referral to a gynecology oncologist is required to manage the case. However, not all cases will require a referral. In cases suspected to be benign, observation of the development of the cyst is required.[30]

In Pre-menopausal Women

A small Cochrane review concluded that combined oral contraceptives may not prevent new cyst formation or resolution of existing cysts. In cases of ovarian cysts, the definitive therapy chosen is usually laparoscopic technique surgery as it is seen to be better in terms of aesthetics and cost-effectiveness. However, in cases with large cyst components and risk of malignancy, laparotomy is preferable. Aspiration therapy is less recommended as it is associated with high recurrence.[28, 29, 31]

In Post-menopausal Women

In post-menopausal women, the management of ovarian cysts referring to the Royal College of Obstetricians and Gynaecologists (RCOG) stated that:

Simple unilateral, unilocular ovarian cysts of less than 50 mm with a normal CA 125 can be managed conservatively; 50% of these will resolve spontaneously within three months.

Cysts of 20-50 mm should be rescanned every four months for one year, with repeat CA 125 assays every four months for one year.

Women with concerning features on ultrasound or raised CA 125 should be referred to the gynecological oncologist.

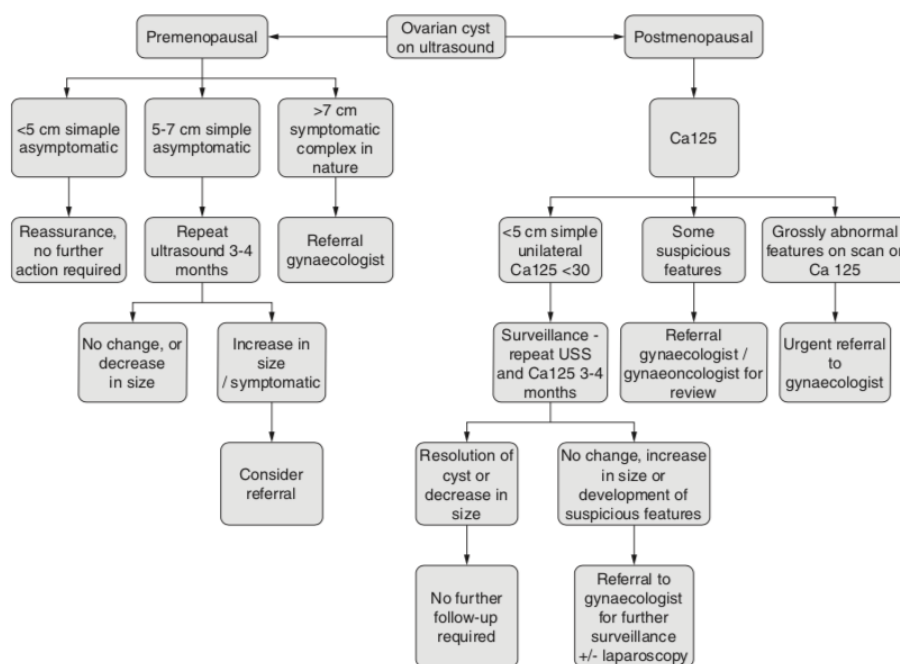


Figure 1: Ovarian cyst management flow[28]

Any woman who does not meet the criteria for conservative management should be offered surgical management. An oophorectomy is recommended rather than a cystectomy, if a malignancy is suspected, as this allows complete removal of the cyst and the avoidance of any spillage into the peritoneal cavity. Bilateral oophorectomy may be appropriate, as the contralateral ovary could be affected either now or in the future.[28]

Some of the above management methods cannot be carried out in all primary facilities in Indonesia, if adjustments are made, the appropriate flow is:

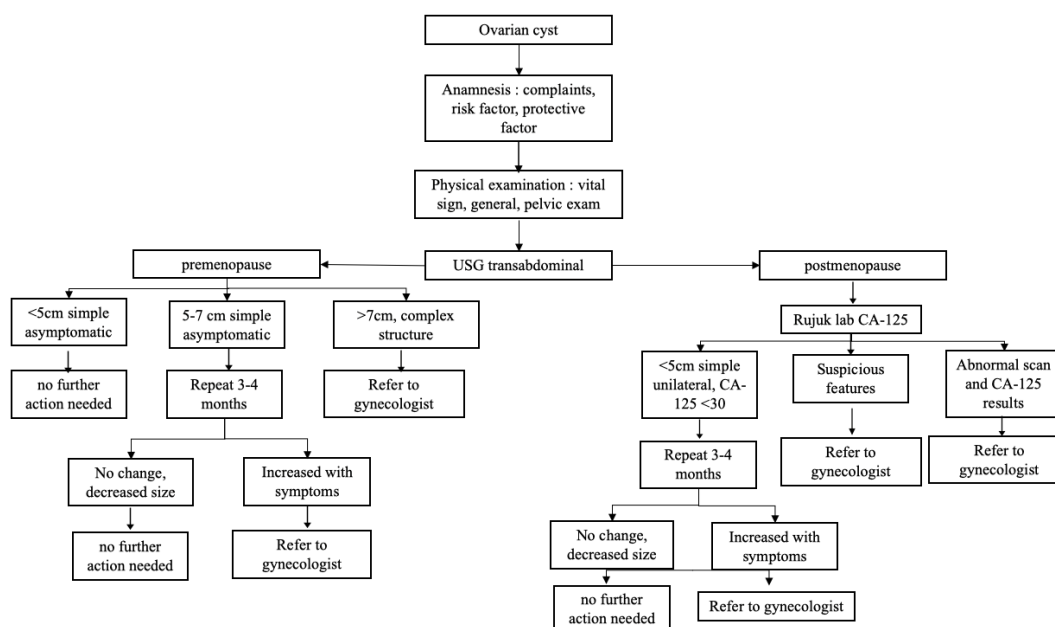


Figure 2: Customized ovarian cyst management flow[28]

CONCLUSION

Ovarian cysts have a high morbidity and mortality rate due to the rarity of symptoms in low stage of this disease. The risk factors also vary, ranging from age, hormonal imbalance, pregnancy, tamoxifen use, maternal gonadotropins, severe pelvic infection, tubal ligation, smoking, and previous ovarian cysts. Diagnosis of early stage ovarian cysts is often difficult based on history alone. However, in suspected malignant cysts, the condition may present with nonspecific complaints such as abdominal lump, excessive or irregular menstrual bleeding, and abdominal distension. A comprehensive history, physical examination and supporting investigations are required to diagnose ovarian cyst. Once the diagnosis is made, treatment is carried out according to the severity of the disease. In cases of benign ovarian cysts, observation of cyst progression is required. Whereas in suspected malignant ovarian cysts, referral to a gynecologic oncologist is required to manage the case.

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