European Journal of Obstetrics & Gynecology and Reproductive Biology 162 (2012) 75–78

Contents lists available at SciVerse ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb

# Simple ovarian cysts in postmenopausal women: scope of conservative management

Madhutandra Sarkar [a,b,*], Mark G. Wolf [b]

[a] Department of Community Medicine, Chettinad Hospital and Research Institute, Chennai, TN, India
[b] Department of Obstetrics and Gynecology, St. Francis Hospital and Medical Center, Hartford, CT, USA

ARTICLE INFO

*Article history:*
Received 27 April 2011
Received in revised form 10 November 2011
Accepted 12 December 2011

*Keywords:*
Ovarian cyst
Postmenopausal
Management
Conservative

ABSTRACT

*Objective:* This study was done to evaluate/investigate the natural history of simple ovarian cysts in postmenopausal women and to determine the risk for malignant transformation of these cysts.
*Study design:* Ultrasound reports of all the postmenopausal women who attended St. Francis Hospital and Medical Center, Hartford, USA from January 1997 to April 2010 with an ultrasound diagnosis of simple cysts of ovary were reviewed retrospectively. A total of 619 patients with 743 simple ovarian cysts were evaluated. It was found that 305 out of 619 patients (49.27%) were lost in follow-up. Therefore, 314 patients (50.73%) with 378 cysts could be followed further by ultrasound study.
*Results:* One hundred and seventy-five (46.30%) of the 378 cysts that could be followed further had spontaneous resolution and 166 cysts (43.91%) persisted unchanged over the follow-up period. Thirty cysts (7.94%) turned into complex cysts and four cysts (1.06%) significantly increased in size. One cyst significantly decreased in size, though it did not resolve. Only one patient developed papillary serous carcinoma (high grade) of the ovary. This occurred three years after her last ultrasound for simple cyst surveillance.
*Conclusion:* Simple ovarian cysts during the menopause can be followed conservatively because their risk for malignant transformation is low. The majority of these cysts either resolve spontaneously or persist unaltered on follow-up.



## 1. Introduction

Simple cysts of the ovary are quite common among the postmenopausal women, although the prevalence is lower than in premenopausal women. Prevalence of simple ovarian cysts in postmenopausal women may range from 3% to 15%. Ovarian cysts may be discovered either as a result of screening, or investigations performed for a suspected pelvic mass, or incidentally following investigations carried out for other reasons.

Increasing use of ultrasound has resulted in increasing detection of these cysts. Transvaginal ultrasound is useful to look for ovarian abnormalities. Ovarian cysts should normally be assessed using transvaginal ultrasound, as this appears to provide more detail and hence offers greater sensitivity than the transabdominal method [1]. Larger cysts may also need to be assessed transabdominally. Color-flow Doppler sonography for evaluation of pulsatility and resistance in vessels that supply potential tumors with blood may be of benefit in assessing ovarian cysts [2], though it does not yet have a clearly established role in assessing ovarian cysts in postmenopausal women.

It is known from various studies that a significant proportion of these cysts either resolve spontaneously or remain stable on follow-up. However, these cysts may become malignant. Certain ultrasound features of cysts, such as septation, papillary projections, and abnormal Doppler flow, are suspicious of malignancy and usually managed by surgery.

Ovarian cancer is the sixth most common cancer in women overall and the second most common gynecological cancer worldwide [3,4]. It is the leading cause of death from gynecological cancer. A woman's lifetime risk for ovarian cancer is between 1% and 2%. Ovarian cancer can affect women of any age, though it most often occurs in women over 60.

The appropriate management for postmenopausal simple cysts of the ovary is not very obvious. Simple cysts are usually followed conservatively, but concern about progression to malignancy may lead to surgical exploration, which in most cases would likely be for benign conditions. Measurement of tumor markers, specifically CA-125, can help in decision-making, although these markers may not necessarily be specific for ovarian cancer and lack sensitivity in early stage disease. So, there is a need for clear guidelines in this area.

* Corresponding author at: 4 Kavita, DAE Township, Kalpakkam, TN 603 102, India. Tel.: +91 0979 167 3025.
*E-mail address:* dr.madhutandra.sarkar@gmail.com (M. Sarkar).

0301-2115/$ – see front matter © 2012 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.ejogrb.2011.12.034

To decide on the appropriate management of a postmenopausal ovarian cyst, its natural history and the risk of malignancy should be understood. With the above background, the present study was undertaken with the following objectives:

(1) To evaluate/investigate the natural history of simple cysts of ovary in postmenopausal women.
(2) To determine the risk for malignant transformation of these cysts followed conservatively by ultrasound.

This study mainly presents our experience on this problem over a period of 13 years in our department.

## 2. Materials and methods

This study was undertaken in the Gynecological Ultrasound section of the Department of Obstetrics and Gynecology, St. Francis Hospital and Medical Center, Hartford, Connecticut, USA. This section is accredited by the American Institute for Ultrasound in Medicine in obstetrical and gynecological sonography. The study was approved by the Institutional Review Board.

The postmenopausal state was defined as cessation of menstruation of 12 consecutive months or more before the first ultrasound study. Postmenopausal patients with a diagnosis of simple cysts of ovary by ultrasound were considered eligible for the study. Ultrasound reports of all those women who attended the Gynecological Ultrasound section from January 1997 to April 2010 with an ultrasound diagnosis of simple cysts of ovary were retrospectively reviewed. Thus, 619 postmenopausal women were identified who attended this section at least once for ultrasound study during that time period. Simple cyst of ovary was defined as an echo-free cyst with a smooth lining and no septae or solid areas or papillary projections within the cyst cavity.

All sonographic examinations were performed on Philips HDI 5000 ultrasound machines with an 8–4 MHz vaginal probe, by an experienced ultrasonographer and a dedicated physician from the Department of Obstetrics and Gynecology. Transvaginal ultrasound was performed to measure the volume of each cyst in three dimensions and also to document the ovarian morphology. All women were scanned with an empty bladder and lying in a dorsal lithotomy position.

St. Francis Hospital's electronic medical record was utilized to review the documentation of all the ultrasound examinations carried out in the Gynecological Ultrasound section. From there, the cases with simple cysts of the ovary by ultrasound were identified and the patients with menopause of 12 consecutive months or more before the first ultrasound study were included in the present study. Patients who were premenopausal or whose records contained inadequate documentation were excluded. The pathology reports of the patients who underwent surgery were also reviewed. No attempt was made to review the documentation of indications for doing ultrasound, family history of cancer, hormone use, presenting symptoms and CA-125 level measurement.

In this institution, postmenopausal simple cysts of the ovary are usually managed by transabdominal and transvaginal ultrasound three times in the first year of diagnosis and then every year. The decision for surgical intervention is made either by a gynecologist or the patient, or if a significant change is noted over the follow-up period. On further analysis, it was found that 305 patients were lost in follow-up. Therefore, 314 out of 619 patients (50.73%) attended for follow-up study in this institution. Thus, 378 cysts could be followed further by ultrasound study. The simple cysts were then noted for progression to complex cyst, significant increase or decrease in size, spontaneous resolution or persistent presence. Complex cyst was defined as development of septation or solid area or papillary projection or echogenic fluid within the cyst cavity. Ovarian cyst volume was calculated by the prolate ellipsoid formula, i.e. length × width × height × 0.523 and expressed in $cm^3$. Significant change in size was defined as increase or decrease in size of the cyst by 20% from the baseline. Descriptive statistics were used to present the results.

## 3. Results

A total of 619 postmenopausal women with 743 simple ovarian cysts identified on ultrasound study were included in this study. On further analysis, it was found that 305 out of 619 patients (49.27%) were lost in follow-up. Therefore, 314 patients (50.73%) with 378 cysts could be followed further by ultrasound study. Because the indications for doing the ultrasound for the first time were not systematically recorded, the specific indication of ultrasound for each patient could not be quantified in this study.

Table 1 shows that 83 patients had bilateral cysts. Twelve patients underwent surgery for the cysts, but malignancy developed in only one cyst. The mean age of the patients at diagnosis was 61 years with a range of 35–96 years. The mean volume of the cysts over the total follow-up period was 21.0 $cm^3$ with a range of 0.1–1704.9 $cm^3$. The mean initial volume of these cysts was 16.3 $cm^3$ with a range of 0.1–860.4 $cm^3$. The mean duration of follow-up for the patients who underwent follow-up study was 26.48 months with a range of 3 weeks–156 months and the mean number of examinations for those patients was 3 with a range of 2–13.

Table 2 shows that of the 378 cysts that could be followed further, 175 (46.30%) had spontaneous resolution and 48.57% of these (85 out of 175 cysts) resolved within one year of diagnosis. In addition, 166 cysts (43.91%) persisted unaltered over the follow-up period. Thirty cysts (7.94%) transformed into complex cysts and four cysts (1.06%) significantly increased in size. One cyst significantly decreased in size, though it did not resolve. Two cysts though turned into complex cysts; on further follow-up they again turned back to simple cysts.

Surgery was done for change in morphology from simple to complex cyst in 9 patients with 11 cysts (two patients had bilateral cysts) and for significant increase in size of the cysts in 3 patients. Pathological diagnoses were available for review from 12 patients with 14 ovarian cysts. Table 3 shows the pathological diagnoses of the ovaries in which surgery was performed. The most common pathological diagnosis was serous cystadenoma of ovary (9 out of 14 cysts or 64.30%). The other pathological diagnoses were mucinous cystadenoma, dermoid cyst, cystic endosalpingitis with focal papillary feature and cystadenofibroma of ovary. Only one

**Table 1**
Demographic and clinical representation of the patients with postmenopausal simple cysts of ovary for the total follow-up period.

| | |
|---|---|
| Total number of cysts | 743 |
| Total number of patients | 619 |
| Number of patients lost in follow-up | 305 |
| Number of patients underwent follow-up study | 314 |
| Number of patients with bilateral cysts | 83 |
| Number of patients underwent surgery | 12 |
| Number of patients who developed malignancy | 1 |
| Age of the patients (years) | Mean: 61; range: 35–96 |
| Number of examinations[a] | Mean: 3; range: 2–13 |
| Duration of follow-up (months)[a] | Mean: 26.48<br>Range: 3 weeks-156 months |
| Cyst volumes ($cm^3$) | Mean: 21.0; range: 0.1–1704.9 |
| Initial cyst volumes ($cm^3$) | Mean: 16.3; range: 0.1–860.4 |

[a] For patients who underwent follow-up study.