Available online at www.sciencedirect.com

ScienceDirect

Journal of the Chinese Medical Association 77 (2014) 21–25

www.jcma-online.com

Original Article

Clinical presentation and outcome of adult-type granulosa cell tumors: A retrospective study of 30 patients in a single institute

Ben-Shian Huang [a,b,c,d], Hsu-Dong Sun [c,e], Yen-Mei Hsu [f], Wen-Hsun Chang [f,g], Huann-Cheng Horng [a,c], Ming-Shyen Yen [a,c], Kuan-Chong Chao [a,c], Shie-Liang Edmond Hsieh [d,h,i,j], Peng-Hui Wang [a,b,c,d,h,i,k,*]

[a] *Department of Obstetrics and Gynecology, Taipei Veterans General Hospital, Taipei, Taiwan, ROC*
[b] *Department of Obstetrics and Gynecology, National Yang-Ming University Hospital, Ilan, Taiwan, ROC*
[c] *Department of Obstetrics and Gynecology, National Yang-Ming University, Taipei, Taiwan, ROC*
[d] *Institute of Clinical Medicine, National Yang-Ming University, Taipei, Taiwan, ROC*
[e] *Department of Obstetrics and Gynecology, Far Eastern Memorial Hospital, Ban Ciao, New Taipei City, Taiwan, ROC*
[f] *Department of Nursing, Taipei Veterans General Hospital, Taipei, Taiwan, ROC*
[g] *Department of Nursing, National Yang-Ming University, Taipei, Taiwan, ROC*
[h] *Immunology Center, Taipei Veterans General Hospital, Taipei, Taiwan, ROC*
[i] *Infection and Immunity Research Center, National Yang-Ming University, Taipei, Taiwan, ROC*
[j] *Genomics Research Center, Academia Sinica, Taipei, Taiwan, ROC*
[k] *Department of Medical Research, China Medical University Hospital, Taichung, Taiwan, ROC*

Received March 21, 2013; accepted May 23, 2013

Abstract

Background: Ovarian adult-type granulosa cell tumors (GCTs) are characterized as low-malignant and late-recurrent ovarian tumors. Although some clinical and pathological prognostic factors have been reported, other factors have yet to be sufficiently investigated for necessary confirmation. The aim of this study was to test the correlation between clinical factors and outcome, based on patients seen in a single institute.
Methods: Thirty patients with pathologically confirmed adult-type GCTs between 1984 and 2010 were reviewed retrospectively. Among them, eight (26.7%) had recurrence, which subsequently contributed to two mortalities.
Results: In a comparison of the clinical characteristics of the premenopausal and postmenopausal women with GCT, all of the postmenopausal women had symptoms (100% vs. 63.6%, $p = 0.01$). With regard to disease recurrence, only abnormal preoperative serum cancer antigen 125 level ($\geq$35 U/mL) was significant (50% vs. 11%, $p = 0.03$), and residual tumor showed a borderline trend (100% vs. 21.4%, $p = 0.06$). Other factors, including International Federation of Gynecology and Obstetrics stage, tumor size, tumor rupture prior to or during operation, body mass index, parity, serum estrogen level, and adjuvant therapy, were not statistically significant.
Conclusion: Physicians should be alert to the difference in the symptom presentation of GCTs between pre- and postmenopausal women, giving particular attention to the usefulness of the preoperative serum level of cancer antigen 125 in patients with GCTs. More evidence is needed to confirm this observation.

Keywords: adult-type granulosa cell tumor; cancer antigen 125; ovary; recurrence

* Corresponding author. Dr. Peng-Hui Wang, Department of Obstetrics and Gynecology, Taipei Veterans General Hospital, 201, Section 2 Shih-Pai Road, Taipei 112, Taiwan, ROC.
E-mail addresses: phwang@vghtpe.gov.tw, phwang@ym.edu.tw (P.-H. Wang).

1726-4901/$ - see front matter
http://dx.doi.org/10.1016/j.jcma.2013.09.007

1. Introduction

Adult-type granulosa cell tumors (GCTs) of the ovary account for 1−2% of all ovarian tumors, and are derived from ovarian sex-cord stromal hormone-secreting tumors.[1] GCTs are characterized as low-malignant and late-recurrent ovarian tumors,[2] but it is evident that patients with this illness have recurrent disease, which typically is the eventual cause of death.[3] Although most symptoms are nonspecific, the clinical symptoms of GCTs may include abdominal pain or distention, and abnormal bleeding or palpable pelvic mass.[4] Due to the rarity of GCTs, the prognostic factors of tumor recurrence are uncertain, although some clinical or pathological factors, such as advanced stage (Stage II−IV), large tumor size, high mitotic index, tumor rupture, and the presence of residual tumor after initial surgery have been reported.[2,3] The potential conventional tumor marker of GCTs is inhibin,[5] although it is used for follow-up. Because the serum level of cancer antigen 125 (CA125) might be elevated in advanced stage and tumor rupture, in theory, and advanced stage and tumor rupture are reported to be correlated with tumor recurrence, it is rational to suppose that the preoperative serum level of CA125 might also contribute to recurrence. The aim of this study was to test the correlation between clinical factors and outcome.

2. Methods

Thirty patients with pathologically confirmed GCTs between 1984 and 2010 at Taipei Veterans General Hospital were reviewed retrospectively. Approval for the study was obtained from the local ethics committee (VGHIRB 98-11-02). The characteristics assessed included age, gravidity, body mass index (BMI), menopausal status, preoperative serum levels of CA125 and estrogen, tumor size, tumor rupture prior to or during operation, surgical method, pathological finding, International Federation of Gynecology and Obstetrics (FIGO) stage, and adjuvant therapy. Survival probabilities were plotted using the Kaplan−Meier life table, and survival differences were tested for significance using the log-rank test. Statistical analysis was conducted using SPSS version 18 (SPSS Inc., Chicago, IL, USA), including Chi-square tests and Fisher's exact test. A p value < 0.05 was defined as statistically significant and all tests were two-tailed.

3. Results

GCTs occurred in the premenopausal status of 19 of the 30 patients. Clinical factors, with the exception of clinical symptoms, of both menopausal and postmenopausal status were similar without a statistically significant difference (Table 1). All premenopausal women had symptoms, but nearly 40% of postmenopausal women were asymptomatic ($p = 0.012$). Abdominal pain or distention (40%, $n = 12$) was most common, followed by bleeding disorder (30%, $n = 9$). Four patients were asymptomatic and the GCT was found accidentally, and all were postmenopausal. The mean age at diagnosis was 48.7 years (range, 32−77 years), and the mean follow-up period was 101.8 months (range, 26−316 months). Mean size of the GCTs was 10.4 cm (range, 5−20 cm). Seventeen of the 30 patients underwent an incomplete surgery (56.7%). The majority of the patients were Stage IA (73.3%, $n = 22$; Table 1). Eight patients (26.7%) underwent adjuvant therapy, and all were treated with multiagent chemotherapy with bleomycin, etoposide, and cisplatin (Table 1).

There were eight cases of recurrence (26.7%) during the follow-up period (Table 2). Recurrence was associated with elevated preoperative serum levels of CA125 (≥35 IU/mL), to a statistically significant degree (50% vs. 11%, $p = 0.03$). Other factors, including FIGO stage, tumor size, tumor rupture prior to or during operation, body mass index, parity, serum estrogen level, complete staging surgery, or adjuvant therapy were not statistically significantly associated with disease

Table 1
Characteristics of the 30 patients with granulosa cell tumors of the ovary.

	All patients ($n = 30$)	Premenopausal ($n = 19$)	Postmenopausal ($n = 11$)	p
Symptoms				0.039
No symptom	4 (13.3)	0 (0)	4 (36.4)	
Bleeding disorder	9 (30)	7 (36.8)	2 (18.2)	
Abdominal pain/ distension	12 (40)	8 (42.1)	4 (36.4)	
Palpable mass	5 (16.7)	4 (21.1)	1 (9.1)	
Symptoms				0.012
No	4 (13.3)	0 (0)	4 (36.4)	
Yes	26 (86.7)	19 (100)	7 (63.6)	
Operation				0.806
USO	9 (30)	5 (26.3)	4 (36.4)	
TH + BSO	8 (26.7)	5 (26.3)	3 (27.3)	
Complete staging surgery	13 (43.3)	9 (47.4)	4 (36.4)	
Tumor rupture				0.104
No	22 (73.3)	16 (84.2)	6 (54.5)	
Yes	8 (26.7)	3 (15.8)	5 (45.5)	
FIGO stage				0.110
IA	22 (73.3)	16 (84.2)	6 (54.5)	
IC	5 (16.7)	3 (15.8)	2 (18.2)	
II	0	0	0	
III	2 (6.7)	0	2 (18.2)	
IV	1 (3.3)	0	1 (9.1)	
CA125 IU/mL				0.266
<35	18 (60)	13 (68.4)	5 (45.5)	
≥35	12 (40)	6 (31.6)	6 (54.5)	
Body mass index kg/m^2				1.000
<25	17 (56.7)	11 (57.9)	6 (54.5)	
≥25	13 (43.3)	8 (42.1)	5 (45.5)	
Adjuvant treatment				0.104
No	22 (73.3)	16 (84.2)	6 (54.5)	
Chemotherapy	8 (26.7)	3 (15.8)	5 (45.5)	
Residual tumor after treatment				0.126
Absence	28 (93.3)	19 (100)	9 (81.8)	
Presence	2 (6.7)	0	2 (18.2)	

Data are presented as n (%).
BSO = bilateral salpingo-oophorectomy; CA125 = preoperative serum level of cancer antigen 125; complete staging surgery = washing cytology, TH, BSO, omentectomy, pelvic and para-aortic lymphadenectomy, and multiple randomized biopsies; TH = total hysterectomy; USO = unilateral salpingo-oophorectomy.