Journal of the Egyptian National Cancer Institute (2014) **26**, 103–108

Cairo University

Journal of the Egyptian National Cancer Institute

www.nci.cu.adu.eg
www.sciencedirect.com

Full Length Article

Treatment outcomes of female germ cell tumors: The Egyptian National Cancer Institute experience

Magdy M. Saber [a], Ahmed A. Zeeneldin [a], Mosaad M. El Gammal [a,*], Salem E. Salem [a], Amira D. Darweesh [a], Alshaymaa A. Abdelaziz [a], Manar Monir [b]

[a] *Medical Oncology Department, NCI, Cairo University, Egypt*
[b] *Department of Medical Statics, NCI, Cairo University, Egypt*

Received 16 January 2014; revised 5 March 2014; accepted 6 March 2014
Available online 4 April 2014

KEYWORDS

Female germ-cell tumors;
Treatment;
Chemotherapy;
Survival;
Side effects

Abstract *Introduction:* Female germ cell tumors (GCTS) are rare tumors that carry a good prognosis.
Aim: To report the experience of the Egyptian National Cancer Institute (ENCI) in managing female GCTs.
Methods: This retrospective study included 19 females with ovarian GCTs presenting to the ENCI between 2006 and 2010.
Results: The median age was 23 years. Ovaries were the primary site in all patients. Dysgerminoma and teratoma were the predominant pathologies followed by mixed GCT in females. Unilateral ovariectomy or ovarian tumorectomy were the classic surgical procedures with R0 resection being feasible in most cases. Surveillance was adopted in six patients with stage I disease. Chemotherapy was administered in 63% of ovarian GCTs with BEP being the commonest regimen with reasonable tolerability and good response rates. The median OS and EFS were not reached. The projected 5-year OS rate was 93.8%. Both OS and EFS were better in patients responding to chemotherapy than non-responders ($p < 0.002$). Stage of disease did not significantly affect OS or EFS.
Conclusions: Female GCTs rarely affect Egyptian females. They have good prognosis.

Introduction

Non-epithelial ovarian malignancies account for about 10% of all ovarian cancers. Ovarian germ cell tumors (GCTs) represent 5% of all ovarian cancers and are mostly diagnosed in young women [1]. The yearly adjusted incidence rate is 3.7/1 000 000 [2]. In Egypt and at the population level, ovarian GCTs constitute 10% of ovarian tumors [3]. At the Egyptian National Cancer Institute, ovarian GCTs constitute 12.6% of ovarian tumors [4]. Ovarian GCTs include

* Corresponding author. Address: Medical Oncology Department, National Cancer Institute, Fom El Khalig, PO Box 11796, Cairo, Egypt. Tel./fax/mobile: +20 1003055255.
E-mail address: elgammalmosaad@yahoo.com (M.M. El Gammal).
Peer review under responsibility of The National Cancer Institute, Cairo University.

Production and hosting by Elsevier

1110-0362 © 2014 Production and hosting by Elsevier B.V. on behalf of National Cancer Institute, Cairo University.
Open access under CC BY-NC-ND license. http://dx.doi.org/10.1016/j.jnci.2014.03.001

several pathologic subtypes e.g. dysgerminomas, endodermal (yolk sac) tumours, embryonal carcinomas, polyembryomas, choriocarcinomas, teratomas, and mixed GCTs [5]. The majority of GCTs (60–70%) are diagnosed at an early stage. Stage I patients have an excellent prognosis with long-term disease free status in >90% of cases [6]. Patients with stage IA grade 1 immature teratoma do not require further adjuvant chemotherapy after adequate surgical staging [7]. Also, stage IA pure dysgerminomas can be treated solely with surgery with a relatively low recurrence rate (15–25%) that can be successfully treated at the time of relapse with a high likelihood of cure [6]. Owing to their exquisite chemo-sensitivity, fertility-sparing surgery should be considered also in advanced stage disease with a cure rate of >95%. Patients should undergo debulking surgery to remove as much gross tumor as possible, but without major extensive procedures because of the high chemo-sensitivity of these tumors and the high cure [8].

Platinum-based chemotherapy regimens have been the treatment of choice and the BEP regimen is the most widely used one [9,10]. BEP is usually administered for three cycles in patients with completely resected disease and for four cycles in patients with macroscopic residual disease. However, there is no consensus as to the optimal duration of therapy [6]. Patients resistant to a cisplatin-based combination may receive vincristine–actinomycin D–cyclophosphamide (VAC) [10] or paclitaxel–gemcitabine as salvage therapy [11]. The role of secondary cytoreductive surgery in patients with recurrent or progressive ovarian GCTs remains controversial. It may have some benefits for a selected group of patients, particularly those with immature teratoma and a growing teratoma syndrome [6].

Little is known about ovarian GCTs in Egypt. Thus, we conducted this study to report the clinico-pathological features, treatments and outcomes of ovarian GCTs at the biggest Egyptian Cancer Center.

Patients and methods

This retrospective study included 19 females having ovarian GCTs at the Egyptian National Cancer Institute (NCI), Cairo University between the January 2006 and December 2010. The study was approved by the Ethics Committee of the Egyptian NCI. Relevant information was extracted from the medical records. These included subjects' demographics, clinical and pathological characteristics, treatments and their outcomes.

Statistical analyses

Statistical analyses were done using SPSS© win statistical package version 17. Survival analyses were done using the Kaplan–Meier method. Comparisons between two survival curves were done using log-rank test. A p-value <0.05 was considered statistically significant. Overall survival (OS) was defined as the time in months between the date of diagnosis and death or loss to follow up. Event-free survival (EFS) was defined as the time in months between the date of treatment and documented recurrence, progression or death.

Results

This study included 19 female patients with germ cell tumors treated at the Egyptian National Cancer Institute during the years 2006–2010.

Patients' characteristics

Age ranged between 18 and 68 years with a median of 23 years. Almost 95% of patients (18 patients) were below

Table 1 Characteristics of female patients with germ cell tumors at ENCI.

	N (%)
Total	19 (100.0)
Median age (range) years	23 (18–68)
Presentation	
Swelling	6 (31.6)
Pain	6 (31.6)
Unknown	8 (42.1)
Primary site	
Gonadal	19 (100.0)
Extra-gonadal	0 (0)
Pathology	
Dysgerminoma	9 (47.4)
Teratoma	9 (47.4)
Mixed GCT	1 (5.2)
Stage	
I	12 (63.2)
II	2 (10.5)
III	5 (26.3)
Surgery	
Ovariectomy	12 (63.2)
Ovarian cystectomy	7 (36.8)
Surgical residual	
R0	11 (57.9)
R2	1 (5.3)
Unknown	7 (36.8)
Chemotherapy	
Yes	12 (63.2)
No	6 (31.6)
Unknown	1 (5.2)
First-line chemotherapy regimen	
BEP	11 (91.7)
Paclitaxel/carboplatin	1 (7.7)
Chemotherapy response	
CR	9 (75)
PD	1 (8.3)
NA	2 (16.7)
Relapse	
RP/PALN	1 (5.3)
Pelvis and liver	1 (5.3)
Chemotherapy on relapse/progression	
BEP	2 (10.6)
Ifosfamide/epirubicin	1 (5.3)
Paclitaxel/carboplatin	1 (5.3)

Abbreviations: GCT: germ cell tumor. R0: no residual, R2: gross residual, OS: overall survival. DFS: disease free survival. PFS: progression-free survival. CR: complete remission. S.D: stable disease. P.D: progressive disease. PR: partial response OR: objective response. TAH + BSO: total abdominal hysterectomy and bilateral salpingo-oophorectomy. Ctx: chemotherapy.