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Original Article

Malignant Transformation of the Mature Cystic Teratoma of the Ovary

Mohamed Sid Ahmed[1] and Abderrahman Ahmedou[2]

[1]Cheikh Zayed hospital, Mauritania
[2]Institute Cheikh Zayed hospital, Mauritania

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***Corresponding Author:**
Mohamed Sid Ahmed
Cheikh Zayed hospital, Mauritania
med_yehdih@yahoo.fr

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ABSTRACT

The mature cystic teratoma of ovary is most prevalent type of neoplasm of ovarian germ cells. It accounts for the almost 20% of the neoplasm. **Objective:** To find the malignant transformation of mature cystic teratoma of ovary. **Methods:** The study was conducted on the 28 patients who visited Cheikh Zayed Hospital Mauritania for the duration of six months from July 2018 to December 2018 and patients who underwent surgery related to ovarian cancer. All the patients underwent tumor marker tests to see the level of cancer antigen in their serum. The level of serum SCC antigen was also tested in all patients before carrying out any surgery. The level of CA-19-9 was also measured. CEA level to check the carcinoembryonic antigen was also carried out. **Results:** Among these 28, there were 15 patients that had malignant transformation from MCT. The age of patients was ranging from 28 to 74 years. The median age was 50 years. There were 9 patients that were on a post-menopausal state. There were 4 patients that were reported as nulliparous, the remaining were parous. Almost all the patients were presented with symptoms like lower abdominal pain and feeling of palpable mass in the lower abdomen. **Conclusions:** Malignant transformation in case of MCT is rare but it has poor prognosis. Its quick detection and proper treatment is very important. The use of surgical operation along with adjuvant treatment and chemotherapy have role in controlling the malignancy.

INTRODUCTION

Dermoid cyst is the second name of the MCT. The mature cystic teratoma of ovary is most prevalent type of neoplasm of ovarian germ cells. It account for the almost 20% of the neoplasm. It is always benign in its pure form. There are many complications associated with the mature cystic teratoma, the malignant transformation is one of the rarely occurring complication associated with MCT [1-3]. The incidence and prevalence of the malignant transformation of MCT varies according to different studies. It is observed in the 1-3% of the cases presented at the hospital. Other reports suggested that the frequency can vary from 5-6%. The physicians experience difficulties in diagnosis of the malignant transformation of MCT as there are no specific symptoms associated with the complication. These are also very uncommon. The diagnosis can be made by the post-operative examinations. It is a benign ovarian cystic pathology. The higher number of MT are reported in the women of reproductive age. The three germs layers of the MCT are ectoderm, mesoderm and endoderm [4-5]. Most of the MCT are reported as asymptomatic but few have reported in literature with symptoms. The most common symptoms are the abdomen pain caused by the infection or torsion. On the other hand the pressure effect of mass cause the abdominal distension. The squamous cell carcinoma are more prone to malignant transformation. The epithelial ovarian cancer normally has the high prognosis than the MT. It has poor prognosis [6, 7]. It is a rare type of MT. MT is one of the serious complication. The MT changes can arise from any germ layer. These usually spread out from the

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ovary, but there are lack of true evidences supporting the hypothesis. Preoperative diagnosis of ovarian cancer is the important risk factor for deciding the type of laparoscopic surgery [8-10]. The MT and MCT must be diagnose before the surgery as the surgical procedure for the MT and MCT are different. The one of the challenging aspects of the pre-operative diagnosis is the MCT complex contents.

METHODS

This retrospective study was conducted on 28 patients who visited Cheikh Zayed Hospital Mauritania for the duration of six months from July 2018 to December 2018. The ethical committee of the hospital approved the study. The patients were informed about the objective of the study and written consent was signed by them. The study was conducted on the patients who underwent surgery related to ovarian cancer. All the patients underwent tumor marker tests to see the level of cancer antigen in their serum. The level of serum SCC antigen was also tested in all patients before carrying out any surgery. The level of CA-19-9 was also measured. CEA level to check the carcinoembryonic antigen was also carried out. The data was stratified by using Microsoft and SPSS tool.

RESULTS

The study was carried out to find the malignant transformation of mature cystic teratoma of ovary. The study was conducted on 28 patients who visited Cheikh Zayed Hospital for a duration of six months and underwent surgery related to ovarian cancer. Among these 28, there were 15 patients that had malignant transformation from MCT. The age of patients was ranging from 28 to 74 years. The median age was 50 years. There were 9 patients that were on a post-menopausal state. There were 4 patients that were reported as nulliparous, the remaining were parous. Almost all the patients were presented with symptoms like lower abdominal pain and feeling of palpable mass in the lower abdomen. There was one patient with silent distention of abdomen. There were two patients that had torsion in the vascular pedicle and among these patients there was one that had ruptured cyst leading to hemopertioneum. All the patients underwent tumor marker tests to see the level of cancer antigen in their serum. Out of the 15 patients, there were 5 patients that have their CA 125 levels more than 35ng/mL. The level of serum SCC antigen was also tested in all patients before carrying out any surgery. The level of CA-19-9 was also measured for all the 15 patients. CEA level to check the carcinoembryonic antigen was also carried out and there was one patient in which its level was high (Table 1).

Sr. #	Age in years	Menopause	Para	Signs at diagnosis	High tumor marker	Size of tumor	Findings	Extra ovarian problem	Name of operation	FIGO stage	Adjuvant Therapy	F/U after operation (in months)
1	68	Yes	4	Pain in lower abdomen	SCC-Ag (2.2 ng/Ml)	11	Cyst (unilocular) along with solid mass	No	TAH,BSO	IA	FPx3	Alive, 98
2	49	Yes	3	Pain in lower abdomen	-	19	Cyst (unilocular) along with solid mass	No	TAH,BSO, Appe,TO	IA	-	DOD,50
3	74	Yes	2	Palpable mass	-	19	Cyst (unilocular) along with solid mass	No	TAH,RSO	IA	-	Alive,52
4	54	Yes	5	Palpable mass	-	14	-	No	TAH,PLND, BSO	IA	FPx3	Alive,134
5	45	No	1	Palpable mass	CA-125 (65.2 U/mL), SCC-Ag (13.4ng/mL)	11	Cyst (unilocular) along with solid mass and thick wall	No	BO,BSO,TAH	IA	-	DOD,21
6	62	Yes	4	Pain in lower abdomen	CEA (28.3 ng/mL)	4	Cyst (unilocular) along with solid mass	No	TAH,TO,BSO	IA	CAPx2	DOD,7
7	48	No	0	Pain in lower abdomen, weight loss	-	4	Cyst (unilocular) along with solid mass	Pelvic peritoneum of 1cm	Mass excision PLNS	IIB	-	Alive,160
8	31	No	0	Pain in lower abdomen	CA-125 (144 U/mL), SCC-Ag (22.4ng/mL)	25	Multilocular cyst	Omentum cake 3cm, bladder serosa	Appe, BSO,TO	IIIC	FPx6	DOD,1
9	28	No	1	Pain in lower abdomen	SCC-Ag (2.4ng/mL)	19	Cyst (unilocular) along with solid mass	Pelvic LN 3cm	PLND,LSO, TAH	IIIC	TPx9	Alive, 148
10	30	No	0		CA-125 (158 U/mL)	19	Cyst (unilocular) along with solid mass	Paraaortic LNs (x2)	Appe,TAH, BSO	IIIC	-	Alive, 21
11	70	Yes	4	Palpable mass	CA-125 (69.1 U/mL)	9	Cyst (unilocular) along with solid mass	Pelvic LN 5mm	PALND,PLND, TO	IIIC	CCRT TPx3	DOD,11
12	42	No	1	Pain in lower abdomen	CA-125 (35.2 U/mL)	9	Multilocular cyst	Omentum 3mm	Laparoscopic RSO	IIIC	TCx9	Alive, 12
13	49	Yes	0	Palpable mass	-	17	Cyst (unilocular) along with solid mass	Paraaortic LN (x1)	BSO,Appe,TO	IA	Capx8	Alive, 6
14	70	Yes	5	Pain in lower abdomen	-	11	Cyst (unilocular) along with solid mass	Small bowl diaphragm	PLND,TO	IIIC	TCx9	DOD, 7
15	43	No	1	Palpable mass	-	11	Multilocular cyst	Sigmoid colon	TAH,TO,BSO	IIIC	CAPx8	Alive, 125

Table 1: Features of Patients

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DISCUSSION

The rate of mature cystic teratoma and its incidence (1.7% of all ovarian cancers) in our study was correlating to previous studies as well. SCC antigen was found to be most prevalent type of antigen found in our study same is the findings by previous studies as well [11]. As per studies, the average age at which the malignant transformation is commonly diagnosed is 55 to 62 years [12]. In our study most of the patients were in the post-menopausal state. As per previous studies there is a role in age of the patient and the early diagnosis. Most of the patients visited the hospital with the problem of lower abdominal pain. There were some patients that reported about the feeling of palpable mass in the lower abdominal area. Abdominal distention was also one of the complaints of the patients. As per previous studies the duration of MCT diagnosis and the malignant transformation is from 2 to 20 months that means that there can be long duration of time between MCT diagnosis and the malignant transformation [13, 14]. CA-125 along with SCC were the most successful tumor markers for making diagnosis. However, the use of SCC for the diagnosis of malignant transformation has a low success rate of 20% as per previous reports. In our study three patients have SCC levels disturbed. Therefore, SCC antigen alone is unable to diagnose malignant transformation. Another study has shown that in case where cancer reoccurrence has occurred, the use of SCC antigen can prove to be successful for diagnosis. The imaging features of tumor can help doctors diagnose about the malignant transformation more easily. As per previous studies there is a solid mass with a contrast color along with an irregular invasion that can clue towards the malignant transformation [15, 16]. It is reported by studies that a tumor of size greater than 10 cm is usually considered to be malignant. In the present study the mean size of tumor was 13 cm. multiple reports prove that MCT has a bad prognosis. The rupture of cyst, vascular invasion, tumor grading is some of the prognostic markers used for its early prognosis. Optical cytoreductive surgery has been showing good results [17]. There are several authors that suggest the use of multimodality therapy that includes aggressive cytoreduction which is then followed by chemotherapy sessions. The nature of tumor is one important factor to study, most of the tumors in this study had a cartilage like substance or greasy substance present inside it [18]. Most of the tumors were unilocular and solid mass was found in them. There was one patient who had thick wall around her cyst. There were 3 patients that had cysts with enormous solid component present in it which suspected the condition like uterine leiomyoma. In our study 12 patients had to go through primary surgical procedure, there were 4 patients that were sent from other hospitals, their surgery was incomplete and they went through secondary surgical procedure at Cheikh Zayad hospital. Peritoneal biopsies were carried out on all the patients. there were several stages of the treatment including collection of clinical data, FIGO stage, adjuvant treatment, then complete follow-up of the patient. The patients who got adjuvant treatment followed by chemotherapy had better chances to recover as compared to others [19, 20]. The most important factor to note here is that the tumor should be taken care of before it starts malignant transformation. Some of the patients reported about the mild signs and symptoms reappearing but in most of the cases there was no recurrence. Another study had demonstrated that the survival rate is increased 100% with the unilateral salpingo-oophorectomy. There is not a single case that shows reoccurrence after using this procedure irrespective, whether the patient was provided adjuvant therapy or not [21, 22]. However, in our study 6 patients died and remaining 9 lived. Only three patients out of 15 received adjuvant therapy others left their staging procedure incomplete. One of the limitations of this study was that the study time was quite less, six months are not enough for a complete follow-up of the cancer patient. Also, if study could be extended and data from more than one hospital is taken then more precise results can be drawn.

CONCLUSIONS

Malignant transformation in case of MCT is rare but it has poor prognosis. Its quick detection and proper treatment is very important. The use of surgical operation along with adjuvant treatment and chemotherapy have role in controlling the malignancy. This type of malignancy is mainly found in women of more than 50 years of age who are in their post-menopausal state and it is linked with large tumors. The SCC and CA-125 levels are increased and can be used as makers for its detection.

Conflicts of Interest

The authors declare no conflict of interest.

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