

## Histopathologic review of ovarian teratoma in Port Harcourt: A multicenter study

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### Abstract

**Background:** Ovarian teratoma are the commonest germ cell tumours of the ovary commonly seen in the young but can occasionally be encountered in the elderly with an increased risk of malignant transformation.

**Method:** This was an 8-year retrospective review of 128 histologically confirmed cases of ovarian teratoma in the university of Port Harcourt teaching hospital and Braithwaite memorial specialist hospital both tertiary health facilities in Port Harcourt from 1<sup>st</sup> January 2009 – 31<sup>st</sup> December 2016. Test of significance was conducted using the Fisher's exact test and *P*-value less than 0.05 was regarded as significant.

**Results:** The mean age of patients was 29.8±5.2. Most (72.7%) of the patients were nulliparous. Abdominal swelling seen in 86 (69.2%) was the most reported symptom and 87 (68.0%) cases had symptoms for at least 6 months before presentation. Benign cystic teratoma was 120 accounting for 93.8% of all germ cell tumours. There were two cases of cystic teratoma with malignant transformation accounting for 1.6% observed in patients between 51-60 years. Patients with mature cystic teratoma who were above 50 years were more likely to have malignant transformation (*P*=0.012). Ovariectomy was the most common surgical intervention performed in 67 (52.3%) patients while bilateral oophorectomy accompanied with total abdominal hysterectomy was performed in 42 (32.8%) cases only.

**Conclusion:** Mature cystic teratoma is the commonest ovarian germ cell tumours with an increased risk of malignant transformation in women aged 50 years and above.

**Keywords:** Ovarian teratoma, Histopathology, Port Harcourt.

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### 1. Introduction

The ovary is an important component of the female genital tract and plays a major role in fertility. It undergoes cyclic hormonal stimulation monthly and is thus prone to both neoplastic and non-neoplastic lesions. The risk of ovarian malignancy increases with advancing age, being 13% in premenopausal to 45% in postmenopausal women.<sup>1</sup> Germ cell tumours are a varied group of benign and malignant neoplasms derived from primordial germ cells.[2-6] Ovarian neoplasm of germ cell origin represent 60-80% of ovarian tumours in children and adolescent.[7] Germ cell tumours are commoner in adolescent and young females in their early twenties, and 30% are malignant.[8] Mature cystic teratoma are the commonest benign tumours

of the ovary, teratoma are less common in women greater than 50 years of age and seems to have a relationship with malignant change as previously reported.[7-10] Histological variants of germ cell tumours of the ovary include mature cystic teratoma, dysgerminoma, yolk sac tumour, immature cystic teratoma, struma ovarii and malignant cystic teratoma. The malignant varieties are the immature cystic teratoma, yolk sac tumour and the malignant cystic teratoma which results from malignant transformation of a benign cystic teratoma which as reported by Gadducci *et al* is usually of the squamous cell variant. [11]

Abdominal pain and swelling are the common symptoms associated with mature cystic teratomas.[12,13] However, Sah *et al* reported that 14% of cases were

asymptomatic whereas Commerci *et al* reported that as high as 60% of cases were asymptomatic.[12,14] Most asymptomatic cases were diagnosed either as laparotomy for other causes, during pregnancy, routine pelvic examination or when ultrasound scan are performed for other indications.[12,13] Torsion which is a gynaecological emergency is a known complication of germ cell tumours and likely to occur with large tumours. Fortunately, torsion seems to be a rare complication as only 3.5% was reported by Commerci *et al*.[14] The most common diagnostic tool is ultrasound scan which was been reported by Morillo to be only 47.6% accurate. Magnetic resonance imaging, computed tomography scan and tumour markers are less commonly utilized due to their prohibitive cost and unavailability especially in resource poor settings. As reported by Comerici *et al*, cystectomies are likely to be performed for smaller tumours while ovariectomies are reserved for larger tumours.[14] Total abdominal hysterectomies and bilateral salpingoophorectomy is recommended for post-menopausal women and in cases of malignancy.[10,13]

The aim of this multicentre pioneer study in Port Harcourt was to determine the prevalence and the clinic-histological features of this important tumour and to contribute to the scare literature on this subject especially in recent years.

## 2. Materials and method

This was an eight-year (2009-2016) retrospective review of surgical pathology specimen from the Department of anatomical pathology of university of Port Harcourt teaching hospital and the Braithwaite memorial specialist hospital both tertiary health care facilities in Port Harcourt in the Niger delta region of Nigeria. Permission were obtained from the Heads of the departments for the use of the departmental records. Socio-demographic information such as age, parity, presenting complaints were also obtained from the day books in both centres and histopathologic slides were reviewed. Results are presented in simple percentages and frequency tables. Test of significance was conducted using Fisher's exact test and *P*-value less than 0.05 was regarded as significant. Patients whose slides and tissue blocks were not available were excluded from the study.

## 3. Results

A total of 128 Germ cell tumours were recorded from both centres. The participants in this study were aged between 10-60 years of age and the mean age was 29.8±5.2 and the most common age group was the 21-30 years

accounting for 39.0%. Most (72.7%) of the patients with teratomas in this study were nulliparous as shown in table 1. The most commonly reported symptoms were abdominal swelling (69.2%) and abdominal pain (59.4%). Torsion was reported in 4.7% of cases as shown in table 2. Most patients had symptoms for 6 months or less before presentation accounting for 68%.

The commonly encountered tumours were benign cystic teratoma, malignant teratoma and yolk sac tumours as depicted in table 3. Benign cystic teratoma were 120 accounting for 93.8% as the most frequent germ cell tumours and fig 1 showed benign cystic teratoma in a 59 year old patient. The majority of benign cystic teratoma was seen in the age group of 21-30 years accounting for 39% (50.0). There were 2 (1.6%) cases of cystic teratoma with malignant transformation. Two of the 14 patients above 50 years with benign cystic teratoma had malignant transformation whereas none of the 108 patients aged 50 years or less had malignant transformation and the difference was statistically significant ( $P=0.012$ ). The patients who had malignant transformation both had duration of symptoms for more than a year following previous diagnosis of benign cystic teratoma. Ovariectomy was the most common surgical intervention carried out for patients with teratomas in this study accounting for 52.3% (67); cystectomy was performed for 42 (32.8%) patients while total abdominal hysterectomy and bilateral salpingoophorectomy was performed for 19 (14.8%) patients.

**Table 1: Sociodemographic variables**

Variable	Frequency n=128	Percentage (%)
<b>Age</b>		
0-10	2	1.6
11-20	16	12.5
21-30	50	39.0
31-40	43	33.6
41-50	3	2.3
51-60	14	10.9
<b>Parity</b>		
Para 0	93	72.7
Para 1	19	14.8
Para 2-4	14	10.9
Para 5 and above	2	1.6

**Table 2: Clinical features**

Variable	Frequency	Percentage
<b>Presenting complaint</b>		
Abdominal swelling	86	69.2
Abdominal pain	76	59.4
Torsion	6	4.7
<b>Duration of symptoms</b>		
Less than 6 months	41	32.0
6 – 12 months	53	41.4
More than 12 months	34	26.6

**Table 3: Germ cell tumours and age distribution**

Age	Benign cystic teratoma	Malignant cystic teratoma	Yolk sac tumour	Immature teratoma	Total
1-10	2				2
11-20	14		2		16
21-30	48			2	50
31-40	41		2		43
41-50	3				3
51-60	12	2			14
<b>Total</b>	<b>120 (93.8%)</b>	<b>2 (1.6%)</b>	<b>4 (3.1%)</b>	<b>2 (1.6%)</b>	<b>128(100%)</b>

**Fig 1: Photo shows a large cystic teratoma in a 59-year-old woman**

#### 4. Discussion

This study showed that germ cell tumours are predominantly benign; this is in keeping with other studies done. [9,11,12] Benign cystic teratoma was the commonly seen germ cell tumour of the ovary. Benign Cystic teratoma were commonly seen in women in the age range of 21-30 years as has been reported previously.[8,15] Comerci *et al* in a study of 517 cases reported a mean age of  $30 \pm 11.8$ . [14] As observed in this study fewer cases were reported with advancing age beyond 30 years of age as was similarly reported by Ahmad *et al*. [8] The two cases of benign cystic teratoma that underwent malignant transformation were observed in women aged between 51-60 years whereas immature teratoma was the malignant variant observed in the young. Malignant transformation was reported by Hackethal *et al* in his systematic review to be common in patients age 50 years or more. [16] Several risk factors have been proposed for malignant transformation and includes exposure to human papilloma virus infection [10], older age, large tumour masses, postmenopausal status and elevated levels of CA 125. [17] Post-menopausal status and advanced age were the risk factors identified in our patients. Most of the patients in this study were nulliparous and this is expected since majority of the patients were young. There are reports of germ cell tumours diagnosed in pregnancy showing that germ cell tumours may not necessarily affect the reproductive

potential of affected patients and most cases are usually unilateral with the contralateral ovary capable of reproductive function. [12,14] Bilaterality is not a common feature with teratomas and Morillo *et al* reported that only 9.8% of cases were bilateral. [13]

Similar to other studies, abdominal swelling and abdominal pain were the commonly reported symptoms and the reason for clinical evaluation. Morillo reported abdominal pain as the most common symptom in 50.9% of cases while Sah reported abdominal and swelling in 85.9% and 79.3% respectively which are similar to findings in this study. As reported in other studies torsion is a rare complication of germ cell tumours. Torsion was reported in 4.7% in this study while Comerci reported 3.5% and Sah in 20.66%. [12,14] In contrast however is the finding that none of the cases in this study was asymptomatic. As high as 60% of cases were asymptomatic in the study by Comerci while Morillo reported that 41.1% were asymptomatic. Most of these asymptomatic cases were detected during routine pelvic examination, during pregnancy or during evaluation for other complaints. [13,14] The difference with this study may be due to the poor health seeking behaviour of patients commonly seen in less developed countries where illiteracy and poverty are highly prevalent. This assertion is also supported by the fact that as high as 68% of patients had duration of symptoms for more than 6 months before presentation. Ovariotomy was the most common

intervention in this study as similarly reported by Morillo were 54.5% of the patients had unilateral ovariectomy. Ovariectomy is preferred for tumours with solid components and especially for large tumours whereas cystectomy is likely to be preferred for small tumours.[14] Conservative surgeries are the preferred surgical intervention in patients with germ cell tumours who are usually young and likely to harbour a benign tumour. As observed by Comerci *et al* biopsy of the contralateral ovary is no longer regarded as best practice as such intervention has been shown to reduce the reproductive potential of these very young patients.[14] Due to the increased risk of malignant transformation, peri- and post-menopausal patients with ovarian tumours require more radical surgery as was the case in 14.8% of cases where Total abdominal hysterectomy and Bilateral Salpingoophorectomy (TAH+BSO) was performed. This was similarly reported by Morillo were 19.6% of patients had TAH+BSO with a mean age of 54.8 years. [13]

## 5. Conclusion

Mature cystic teratoma is the commonly encountered ovarian germ cell tumour mostly seen in young women with an increased risk of malignant transformation in older women. Nulliparity and abdominal swelling were commonly associated with mature cystic teratoma while ovariectomy was the most common surgical intervention performed.

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