

A CLINICOPATHOLOGIC REVIEW OF TERATOMAS IN JOS UNIVERSITY TEACHING HOSPITAL JOS, PLATEAU STATE

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Abstract

Introduction: Teratomas are neoplastic growths containing tissue representative of more than one germ cell layer. The complexity of the composition of teratomas poses diagnostic difficulties to pathologists, radiologists and clinicians in general. The incidence of teratomas is highest during the neonatal period and infancy where most are located in the sacrococcygeal region. In terms of gross morphology, teratomas can be cystic, solid or mixed. Histologically, they can be tridermal, bidermal or monodermal.

Materials and Method: A descriptive, retrospective hospital based study involving retrieval of records for teratomas diagnosed at the Histopathology department of the Jos University Teaching Hospital between January 2004 and June 2015. Information obtained was presented in forms of frequencies and percentages and depicted in the form of tables, and pie charts.

Results: A total of 96 teratomas were diagnosed over the length of the study period. The ages of the patients ranged from 4 days to 70 years, with a mean age of 27.4 years. Childhood teratomas (cases 14 years and below) accounted for 16 (16.7%) of all cases. A male to female ratio of 1:15 was observed, with females accounting for 90 (93.8%) of the cases, while only 6 teratomas (6.2%) were seen in males. Histologically, 90 (93.8%) of the teratomas were benign/mature, while only 6 (6.2%) were immature. Abdominal pain and or swelling was the commonest mode of clinical presentation in cases of ovarian teratomas, as seen in 69 (88.5%) of cases. Teratomas were observed as an incidental finding in 11.5% of cases.

Conclusion: Teratomas in Jos are predominantly seen in children and are mostly benign. Females were more commonly affected than males, and abdominal pain is the commonest symptom.

Key Words: Teratoma, clinicopathologic, Jos, Germ Cell, review.

Introduction

Teratomas are neoplastic growths containing tissue representative of more than one germ cell layer. Neoplasms typically contain elements derived from a single germ cell layer i.e. either endoderm, mesoderm or ectoderm. Teratomas, classified as non seminomatous germ cell tumours (NSGCT), occur from neoplastic transformation of multipotential/totipotential cells and can be

gonadal arising in either the testes or ovaries, or extragonadal, occurring midline structures such as the mediastinum, spine and retroperitoneum as well as the omentum, lung and central nervous system (CNS). The complexity of the composition of teratomas poses diagnostic difficulties to pathologists, radiologists and clinicians in general.

The incidence of teratomas is highest during

the neonatal period and infancy where most teratomas are located in the sacrococcygeal region. In a study in Jos, Nigeria, more than half of the cases of sacrococcygeal teratomas were seen in neonates. In Germany, teratomas account for 40% of germ cell tumours in children, whereas they make up 79.5% of childhood germ cell tumours in Ibadan.

Most of benign teratomas are encountered in younger infants (<4months), whereas malignant teratomas tend to occur in older individuals. Teratomas are four times more common in girls than in boys. This was reflected in Nigerian studies carried out at Ibadan and Zaria, in which the male to female ratios for teratomas were 1:5 and 1:1.7 respectively.

Teratomas occur more frequently in gonads than in extragonadal sites. In Manchester, England 48.8% of teratomas were seen in gonads, whereas 53% of cases seen in Italy were extragonadal. These tumours are the most frequent germ cell tumours in females. In Nepal, teratomas were documented to be the commonest germ cell tumour of the ovary, while in Tunisia, they were observed to be the commonest ovarian tumour

In terms of gross morphology, teratomas can be cystic, solid or mixed. Histologically, they can be tridermal, bidermal or monodermal. Furthermore, microscopic evaluation of tissue components helps delineate these tumours into immature and mature subtypes based on the proportion of undifferentiated tissue they contain. Biologically, virtually all teratomas are benign, very few are malignant. A survey in Ibadan, Nigeria by Akang, observed that only 4% of teratomas were malignant, while only 5% of teratomas seen in Greece were malignant. Malignant teratomas can be primary or secondary, depending on whether or not the malignant

components occur in the tumour ab initio or upon recurrence.

Understandably, gonadal teratomas present with chronic pelvic pain, fertility related symptoms and menstrual irregularities. Chronic pelvic pain was the commonest symptom observed in ovarian teratoma cases studied in Nepal and Turkey. In neonates teratomas are usually accompanied by multiorgan deformities and some degree of neurologic dysfunction. Features of a space occupying lesion are the primary mode of presentation in extra gonadal locations. Notably, bladder outlet obstruction, constipation and lower limb oedema were all forms of presentation observed in extragonadal teratomas seen in Ilorin, Nigeria.

Teratomas exhibit a highly variable spectrum of differentiation, and clinical presentation. Hence they pose a potential diagnostic dilemma to the pathologist and the clinician. They may occur as benign, well differentiated cystic lesions (mature), lesions of indeterminate behaviour (immature) as well as lesions that are frankly malignant. In general, majority (approximately 75%) of teratomas are benign. Studies performed in Italy, and Zaria (Nigeria) showed a predominance of benign teratomas, accounting for 69.3% and 82% respectively. However, few teratomas are malignant, a view reflected by findings in Ibadan (Nigeria) where only 4% of teratomas were malignant.

Malignant teratomas usually contain a mixture of teratomatous and non teratomatous germ cell tumour components such as yolk sac tumours and choriocarcinoma. The proportion of the different germ cell tumour components determines the clinical presentation as well as prognosis/response to therapy in most

instances. Teratomas are considered immature if they contain at least foci of embryonal or incompletely differentiated tissue. Immaturity is graded from 0 to 3 using the Gonzalez-Crusi classification. Grade 0 is mature containing completely differentiated tissue, grade 1 contains less than 10% undifferentiated tissue, while grades 2 and 3 contain 10-50% and greater than 50% undifferentiated tissue respectively.

There is a lack of a comprehensive documentation/description of teratomas in Nigeria especially with regards their unique clinical and morphologic characteristics.

This was a descriptive retrospective analysis of all teratomas seen at the Histopathology department, Jos University teaching Hospital, over a period of 10 years, with regards to their age and site of distribution, histologic components, biological behaviour as well as correlation with clinical presentation.

Aim: To document and analyse the clinicopathologic characteristics of teratomas seen at the Jos University teaching Hospital between January 2004 and June 2015.

Methods:

This was a descriptive, retrospective hospital based study carried out on all histopathologically diagnosed teratomas at the Jos University Teaching Hospital. Relevant data regarding age, sex, site clinical features and histologic features were obtained from the records of the pathology unit of the Hospital. The teratomas were classed according to their histologic features using the World Health Organization (WHO) classification. Information obtained was presented in forms of frequencies and percentages and depicted in the form of tables and pie charts.

Results:

A total of 96 teratomas were diagnosed over the length of the study period. The ages of the patients ranged from 4days to 70 years, with a mean age of 27.4 years. Childhood teratomas (cases 14years and below) accounted for 16(16.7%) of all cases. A male to female ratio of 1:15 was observed, with females accounting for 90(93.8%) of the cases, while only 6 teratomas (6.2%) were seen in males (Table1). Gonadal teratomas were predominant, observed in 80(83.3%) of all cases, while primary extragonadal involvement was seen in 16(16.7%) of cases (Table1).

However there was a solitary case involving both gonadal and extragonadal sites. Ovarian teratomas made up 78(97.5%) of cases with primary gonadal involvement, while only two cases (2.5%) were seen in the testis (Table2). A sacrococcygeal teratoma was the commonest site for extragonadal involvement, accounting for 8(50%) of cases, while the gluteal and cervical regions were the least frequent sites, accounting for 1(7%) case each (Figure1).

Histologically, 90(93.8%) of the teratomas were benign/mature, while only 6(6.2%) were immature. All the immature teratomas were found in females, while all male teratomas were mature (Table3). Immature teratomas occurred in equal proportions between gonadal and extragonadal sites (Table1).

Abdominal pain and or swelling was the commonest mode of clinical presentation in cases of ovarian teratomas, as seen in 69(88.5%) of cases. Teratomas were discovered as an incidental finding in 9(11.5%) of cases, which had a hysterectomy, a Caesarean section or dilatation and curettage for other indications. Individuals with abdominal pain/swelling had menstrual irregularities and symptoms indicative of infertility/subfertility in 3(4.3%) and 4(5.8%) respectively (Figure2).

Table 1: demographics and site distribution of teratomas

| Characteristic | Freq | Percentage (%) |
|-------------------|-----------|----------------|
| Age(years) | | |
| =14 | 16 | 16.7 |
| 15-25 | 18 | 18.8 |
| 26-35 | 28 | 29.2 |
| 36-45 | 16 | 16.7 |
| 46-55 | 6 | 6.3 |
| 56-65 | 1 | 1.0 |
| 66-75 | 2 | 2.1 |
| Unspecified | 9 | 9.4 |
| Total | 96 | 100 |
| Sex | | |
| Male | 6 | 6.3 |
| Female | 90 | 93.7 |
| Total | 96 | 100 |
| Site | | |
| Gonadal | 80 | 83.3 |
| Extragenadal | 16 | 16.7 |
| Total | 96 | 100 |

Table2: Behaviour and site distribution of Gonadal Teratomas

| Site | Mature | Immature | Total (%) |
|--------------|-------------------|-----------------|-----------------|
| Ovary | 75 | 3 | 78 |
| Testis | 2 | 0 | 2 |
| Total | 77(96.25%) | 3(3.75%) | 80(100%) |

Table 3: Behaviour and Sex distribution all Teratomas

| Sex | Mature | Immature | Total (%) |
|--------------|-------------------|-----------------|-----------------|
| Male | 6 | 0 | 6 |
| Female | 84 | 6 | 90 |
| Total | 90(93.75%) | 6(6.25%) | 96(100%) |

Extragenadal Teratomas

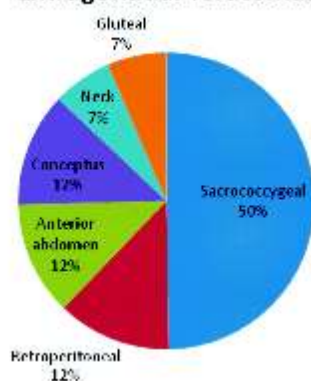


Figure 1: Distribution of extragenadal teratomas by site

Clinical features of ovarian teratomas

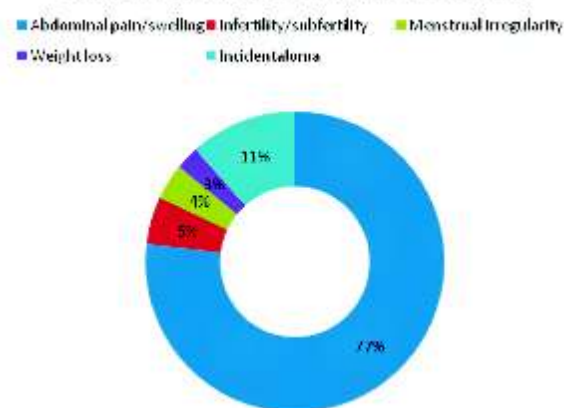


Figure 2: Clinical features of ovarian teratomas.

N:B Weight loss, menstrual irregularities, and infertility were all accompanied by abdominal pain

Discussion

The predominance of female cases of teratomas is mirrored by findings in other parts of Nigeria by Mohammed (Zaria) and Edegbe (Ibadan). However, the male to female ratio of 1:15 is much higher than that obtained in these studies. Teratomas were commoner in females at both gonadal and extragenadal sites. The rarity of testicular teratomas in proportion to ovarian teratomas partly accounts for this sex distribution.

About 16.7% of cases occurred below the age of fifteen, this mirrors findings(18%), in Ibadan by Akang et al. Amidst the children, extragenadal sites and mature types were both predominant, findings similar to observations in Germany and Ibadan.

Mature teratomas were the most common histologic type of teratomas in this study. This corroborates findings from previous studies in Ibadan(Nigeria) and Italy. Immature teratomas have been consistently demonstrated to be less frequent than mature types. A female predominance was observed in both mature and immature teratomas.

The relative rarity of extragenadal teratomas in this study reflects the fact that these tumours arise from arrested migration of germ cells during development. However as observed in this study, amidst children, extra gonadal involvement predominates, and this correlates with findings by Harms in Germany and Mohammed in Zaria (Nigeria). In the same vein, 53% of cases seen in Italy were extragenadal. The sacrococcyx was the commonest site of extragenadal teratomas, in accordance with other previous studies in Ilorin and Ibadan, while our observation that the cervical region was the second commonest site, correlates

with findings by Williams

The ovaries were the commonest site of gonadal teratomas in this study; 96.2% of these were mature with 3.8% showing features of immaturity. This mirrors findings in Tunisia, in which 3.3% of ovarian teratomas were immature. A clinical feature of abdominal pain/swelling was the commonest observed, seen in 88.5% of cases. This is much higher than 63% and 68% obtained in Port- Harcourt (Nigeria) and Greece respectively but similar to 90% observed in Tunisia. Slightly decreased fertility has been observed in patients with teratomas due to either functional or surgical loss of ovarian tissue. Notably, 3.8% of cases of ovarian teratomas in this study had secondary infertility /subfertility. Incidental discovery/diagnosis of ovarian teratomas was seen in 11.5% of cases. This was less than a rate of 25.3% observed in study by Sahraoui in Tunisia. Such incidentalomas are usually associated with a small sized mass, and mature histology.

Conclusion:

The extensive variation of the site and clinical presentation of teratomas necessitates extensive documentation description to aid in proper diagnosis and management. More than 10% of cases were “incidentalomas”. Pathologists and clinicians alike must consider teratomas as possible differential diagnosis when encountering lesions with undefined/poorly defined characteristics.

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