



Immature Ovarian Teratoma: Approach and Management

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ABSTRACT

Background: A teratoma is an ovarian germ cell tumor, that is, it is made up of different types of tissues or organs, it occurs in 20% of all neoplasms, at the pathological level, these tumors include different germ cell origins, which causes the tumor to be pluripotent, histologically, it includes at least two layers of well-differentiated mature germ cells, among them we have ectoderm, mesoderm, and endoderm.

Methodology: A systematic review was carried out through various databases from 2010 to 2021; The search and selection of articles was carried out in indexed journals in English and Spanish. Key words were used: teratoma, immature, ovarian, approach, management.

Results: Within the approach to immature ovarian teratoma we can find several options that can be implemented within the management and treatment according to the histological grade of the teratoma, although it is still under discussion and each case must be evaluated individually and uniquely, for the majority. For young patients, fertility preservation through oocyte preservation should be considered.

Conclusion: Most of the patients who are diagnosed with this type of tumor and have a correct approach tend to be cured of this disease, however, since the risk of recurrence is quite high when we talk about grade 2 or 3 tumors, it is recommended careful follow-up of patients, especially during the first two years after completion of treatment.

KEYWORDS: Teratoma; Immature; Ovarian; Approach; Management

INTRODUCTION

A teratoma is an ovarian germ cell tumor, that is, it is made up of different types of tissues or organs, it occurs in 20% of all neoplasms,

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Received: March 06, 2023

Published: August 03, 2023

How to cite this article: Carlos FDM, Ronald ALB, Ariel DDD, María AMR, Nélide HS, et al. Immature Ovarian Teratoma: Approach and Management. 2023- 5(4) OAJBS.ID.000564. DOI: [10.38125/OAJBS.000564](https://doi.org/10.38125/OAJBS.000564)

cells, among them we have ectoderm, mesoderm, and endoderm [1]. Normally a teratoma can be found with well-differentiated tissues, that is, it can contain bones, teeth, nervous tissue, eyes, among others, it usually behaves like a benign tumor due to the mature development that makes up the tissues, which decreases the probability that it will develop. Cancer usually occurs in women of childbearing age [2]. On the other hand, immature ovarian teratomas, is a type of germ cell cancer, which contains immature structures and usually occurs in 1% of neoplasms, usually occurs in young women, has a good prognosis if is detected in the early stages [3]. Within the clinical manifestations of the lesion that is generated by slow growth, they are related to its size, compression or torsion, the latter is the most frequent complication during pregnancy, during the puerperium stage mostly in young patients from 0 to 20 years [4]. In the present investigation, everything that includes an immature ovarian teratoma, its clinical presentations, its different approaches and the different updated management found in the current literature will be broken down.

METHODOLOGY

A systematic review was carried out since January 2018, in the virtual databases, Ncbi, Lilacs, Pubmed, Biomed Central, Science direct, among others, using the MeSH descriptors: "teratoma, immature, ovarian, approach, management"; and their equivalents in the English language: "teratoma, immature, ovarian, approach, management.". A search criterion was established for the language, thus choosing articles in Spanish and English. The search time interval was from 2010 to 2022. Articles that contained information on updates on the approach and management of immature ovarian teratoma were selected. A total of 92 articles were obtained from all the databases consulted, from which they were filtered taking into account the inclusion and exclusion criteria.

RESULTS

Ovarian teratomas, also known as dermoid cysts, are among the most frequently occurring ovarian neoplasms and represent 20% of benign ovarian tumors [5]. It generally occurs in patients between the ages of 15 and 49 and they do not usually present symptoms, these occur in the case of torsion, rupture or infection. These are a type of tumor that is comprised of several germ layers and are classified as mature tumors [6]. These contain tissues

that can be differentiated very well, such as embryonic structures, such as nervous tissue, eyes, fingers, among others. The mature teratoma in most cases is benign while the immature teratoma has a more aggressive course [7]. Teratomas comprise 95% of germ cell tumors, these are divided into 4 categories: mature teratomas, immature teratomas, malignant transformation teratomas, and specialized mesodermal teratoma [8,9].

Mature Teratoma

This tumor is cystic and is composed of differentiated mature tissues, it constitutes the majority of teratomas and is the most frequent ovarian neoplasm in young women of reproductive age, it presents elements of the three layers, ectoderm, mesoderm, endoderm, which allows it to present tissues such as skin, hair, gastrointestinal system, muscle at a macroscopic level [10]. The clinical manifestations in the majority of women are asymptomatic samples, and if symptoms are present, these are more related to the size that the mass has reached.

Teratomas with Malignant Transformation

According to the consulted bibliography, malignant transformation only occurs in 0.2-2% of mature teratomas, however, any of its compounds can generate abnormalities, the most common being squamous cell or epidermoid carcinomas, as well as basal cells. melanomas, among others. Among the risk factors we find age over 45 years, growth acceleration that generates a diameter greater than 10cm, suspicious ultrasound [11].

Specialized Monodermal Teratoma

It is a neuroendocrine neoplasm, its presentation is usually unilateral and it is made up of mature thyroid tissue, thyroid hormone secretions which generate hyperthyroidism in 30% of cases. Most of these teratomas are usually benign, carcinoid tumors do not occur very frequently [12].

Immature Teratoma

This type of tumor, also known as teratoblastoma, usually occurs in 1-3% of all germ cell tumors, presents different degrees of immature tissue, and is the only germ cell teratoma that is histologically staged, from stage 1. well differentiated up to stage 4 poorly differentiated, in Table 1 we summarize the stages [13].

Table 1: Immature teratoma stages.

Stadium	Synthesis
Stage 1	This involves only the ovaries
Stage 2	This involves more than pelvic tissues
Stage 3	It involves beyond the pelvis, retroperitoneal lymph nodes, but continues to confine the abdomen
Stage 4	Presence of distal metastases or liver involvement

Histology and Prognosis of Immature Ovarian Teratoma

It is very important to mention that the histological grade is an essential indicator of the level of risk of extraovarian dissemination and recurrence [14]. Distant metastasis from an immature ovarian teratoma is rare. However, age, race, and the stage of the teratoma at the time of diagnosis are substantial indicators for survival, within the histological grade of the tumor we can find that patients with grade 1 have an 82% survival, patients with grade 1 2 has 63% and for patients with grade 3 30% [15].

Immature teratoma can present as a mass in the pelvic region, presenting clinical manifestations such as unusual bleeding and pelvic pain. Among the most common sites of spread are the peritoneum, retroperitoneal lymph nodes, and hematogenous spread to the lungs [16].

The conversion of an immature teratoma is differentiated by a slow growth with atypical symptoms, for which the diagnosis of recurrence tends to be neglected, these teratomas tend to be larger, around 15 cm, a great difference compared to mature teratomas.

Benign, which develop a size between 6 to 10 cm, therefore, a tumor larger than 10 cm represents an indication of malignancy. Age may be a risk factor for malignant transformation of mature ovarian teratomas, however, several studies have shown that there is no relationship between age and the risk of malignant transformation [17]. The most useful tumor marker for the prediction of malignant

transformation, although its implementation is still being discussed, is the squamous cell carcinoma antigen, because it is only positive in 30 to 60% of cases, which is why it is insufficient to exclude malignant transformation. Below, Table 2 will be observing the classifications of germ cell tumors according to the WHO [18].

Table 2: Classification of germ cell tumors.

Primitive germ cell tumors	Dysgerminoma. Yolk sac tumors. Embryonal carcinoma. Polyembryoma. Non-gestational choriocarcinoma. Mixed germ cell tumor. Immature teratoma.	
Biphasic or triphasic teratomas	Mature teratoma	Solid Cystic (dermoid cyst) fetiform teratoma
Monodermal teratomas and associated somatic tumors	Thyroid group Carcinoids Neuroepithelial tumors Carcinomas Others	

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Ramírez Reyes, D. Características clínicas y experiencia en el diagnóstico de los tumores germinales de ovario en el Hospital de la Mujer, Aguascalientes en un periodo de 10 años.

Management of Immature Ovarian Teratoma

Within the approach to immature ovarian teratoma we can find several options that can be implemented within the management and treatment according to the histological grade of the teratoma, although it is still under discussion and each case must be evaluated individually and uniquely, for the majority. Of young patients, the preservation of fertility through the preservation of oocytes should be considered, since the recurrence rate is quite high in these cases, follow-up is recommended after finishing treatment, in the case of young patients pediatric patients, after surgery, a careful observation of their condition and evolution is recommended [19]. Treatments for immature ovarian teratoma in most cases surgery is used including hysterectomy, lymph node dissection, omentectomy, bilateral salpingo-oophorectomy, taking into account the adjuvant chemotherapy that best suits the patient [20]. Previously, contralateral ovarian biopsy was indicated, but is currently not recommended despite the high chance of recurrence, due to new tecnología such as precise ultrasound imagen [21]. Different approaches vellón surgery are not indicated except for the present of ascites or capsular rupture, nor is radiotherapy indicated since it has been reported that it does not tend to improve the prognosis of patients with immature teratoma in grade 1 [22]. Among the complications due to surgical management, there is a high risk of chemical peritonitis in the case of laparoscopy. If a rupture occurs during the procedure, peritoneal lavage is recommended, but it is extremely rare and does not usually occur. Among the most frequent complications is torsion, infection or rupture.

DISCUSSION

Germ cell tumors generally do not present precise symptoms and tend to have a benign behavior, as reported by Sánchez et al. [23] in a case report published in 2010. Where a woman was diagnosed a 2-month-old infant with a hard abdominal mass located on the left flank, where it was confirmed to be a grade 2 immature teratoma, who subsequently showed moderate cardiomegaly through a chest X-ray, where a multidisciplinary team decided on a surgical approach by median supra-umbilical laparotomy, finding a retroperitoneal tumor with a vascular appearance, a complete extraction was obtained without complications, the subsequent evaluation was satisfactory, no tumor remains were found, there is no evidence in the current literature of a possible relationship between immature teratoma and cardiomegaly. On the other hand, within the treatment, age and type of tumor should be considered, since the type of approach most suitable for the patient will depend on these variants, as mentioned by Angelina et al. [24] in their research that it is called "immature (malignant) ovarian teratoma". Where they emphasize that, because it is a fairly common tumor in young patients, treatment must try to preserve their future fertility, a treatment such as unilateral salpingo-oophorectomy with extensive sampling of peritoneal implants in a patient with a stage 1 tumor, seems to be a good option, since in patients with a stage 2 or 3 tumor, they should also be treated with adjuvant chemotherapy containing bleomycin, cisplatin and etoposide. Fertility preservation is possible, as indicated by the researcher Henry et al. [25] in a case report of a 22-year-old patient who sought therapeutic alternatives after a possible diagnosis of bilateral ovarian teratoma. What is recommended in this case by the multidisciplinary team, given the degree of possibility of developing malignancy, is bilateral oophorectomy, which was refused. Finally, the patient underwent surgery through laparotomy where enucleation of both tumors

was achieved and the ovarian tissue was preserved in its entirety. Fertility preservation surgery is possible thanks to the existence of a dissection plane between the tumor margins and the healthy ovarian tissue. The tissue must be evaluated macroscopically to rule out residual lesions.

CONCLUSION

Early diagnosis is essential through clinical tests, physical examination, and tumor markers, especially if an immature ovarian teratoma is suspected, so that correct management can be evaluated according to the patient's convenience, performing tumor resection when it is still in its early stages, since this will determine the survival of the patients. Most of the patients who are diagnosed with this type of tumor and have a correct approach tend to be cured of this disease, however, since the risk of recurrence is quite high when we talk about grade 2 or 3 tumors, it is recommended careful follow-up of patients, especially during the first two years after completion of treatment.

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