Original Article

Pediatric gynecology: ovarian teratomas in children

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Abstract

Background: Despite teratoma being a usual histological type of embryonic ovarian tumor among juveniles, for this age group, the proper treatment is still unclear. Ovarian teratoma may have a genetic background. The maturity and immaturity of the ovarian teratoma can also be challenging for decision-making in terms of the treatment strategy. Globally the Epidemiological rate of the sacrococcygeal teratoma is about 0.0014 to 0.0033 % among the newborn. Ovarian teratoma is the most common disease. While the malignancy in the germ cell is about 3 among the other cancers, the reported cases about 0.0003, which is gradually increasing daily.

Objective: Ovarian teratoma is still a mystery to the doctors, and the clinician due to lack of information regarding its cause, its proper treatment policy, and lack of family awareness. In this paper we discuss the causative agent, symptoms. treatment and effect of the ovarian teratoma, which will help in future therapy and research to find a possible cure or treatment option?

Material and Methods: The study complies with Arksey and O'Malley's methodological structure. This research utilized the EQUATOR elements and conducted a meta-analysis (PRISMA-ScR). This research utilized reliable scientific methodical data that was available. The data analysis was conducted on the authentic and verified available resources. The following information was gathered from the reviewed articles for this study: What is the focus of the study? What's the topic? Will an ovarian teratoma in children have a special zone? Who is better qualified to test for terratomas? Are the gaps in the research? What fields require more research? Are their explanations in some areas for inadequate research?

Results and Discussions: In 11 regions, we found 23 studies. 18 history, 3 forward-looking studies and 3 experimental studies. There are 6 trials of two groups of tumors, namely mature, 5 immature and 13 trials. More than 50 patients participated in a total of 9 trials. the name of the journal, main author, the place of origin, year of publication, cover, the form of study, population, age group, Research group, objectives, general method overview, most relevant measurement findings and individual research findings was studied.

Conclusion: This research found several information deficits in the database of pediatric ovarian teratoma. This subject, overall, has not been fully researched especially with regards to, this cancer and patient population, which require further research. [*Ethiop. J. Health Dev.* 2020; 35(3):000-000]

Keywords: Ovarian teratoma, Ovarian neoplasm, Gynecology, Pediatrics

Introduction

Despite numerous research on cancer management, the treatment of ovarian cancer remains a mystery to medical science. The physiological changes in the patient's body are a fairly common form of childhood ovarian carcinoma. These are commonly considered to be reproductive cell tumors, which frequently occur in the reproductive age group, with a vast majority being merely teratogenic. However, there are still uncertain aspects of its structure, evaluation and management, (1, 2). such as: its embryology and genetic origin, its malignant potential, the likelihood of using surgical procedures to protect the ovary, and chemotherapy's applicability for treatment. The selection of effective treatment options is hindered by various staging schemes, histopathological classification, and risk stratification. The lack of common literature terminology and a systematic pediatric-adult patient review are other factors (3). Ovarian teratoma is the most common type of childhood ovary tumors, which can be classified into mature ovarian teratoma and immature ovarian teratoma. Mature teratoma is a benign tumor and is more aggressive when compared to immature ovarian terratomas and has a propensity for recurrence. Immature teratoma is a malignant ovarian tumor and consists of immature tissue elements with the mature components.

Some aspects of pathology classification and handling of ovarian teratoma, including its embryology, and the genetic basis are still unclear. The specific concern lies in its potential to develop quiet rapidly, whereby a surgeon with the use of technology and chemotherapy may assist with alleviating the effects of ovarian terratomas. According to recent research, preserving the ovaries is recommended for the treatment of mature teratomas under certain conditions (2, 4). Due to the complex structure, and various substances there may be uncertainty which is further impacted by cell immaturity or significant findings in the yolk sac tumor which is microscopic. On the contrary, histological difficulties and sampling may lead to negligence. According to research, treatment of the cells, especially in large tumors, differs in terms of chemotherapy and treatment (2, 5-9). There is limited understanding of ovarian teratomas in children, with varying results. In the sense of women with ovarian cancer, overall reproductive health has a significant impact on physical health and social wellbeing. Ovarian teratomas are one of the most common ovarian lesions and are expected to generate significant interest among clinicians, researchers, and officials due to their positive effects on children in pediatric patients. A detailed review of all potential variables and a clear description of each patient's needs can form the basis of the best strategy in terms of dealing with terratomas (10). It is difficult to make decisions due to the lack of research focusing on ovarian terratomas in children, when the bulk of the research focusses only on adult and adolescent with ovarian teratomas in. Further research is required to

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understand this complex problem to continue with the treatment of ovarian teratomas in children. This is an overview of the scope of fundamental research on this topic. To the best of our knowledge, the literature on ovarian teratomas in litter certified children has no remarks. Importantly, review studies may not be as good as their constituent components(11, 12), and insufficient high-quality studies on this subject are available.

Materials & Methods

The study complies with Arksey and O'Malley's methodological structure as well as other covers by Levac et al.(13). Dr. Hilary Arksey and Dr Liza O'Malley's framework of social policy research is one of the strongest methodological frameworks available (14). At the request of the respective authors, an agreement can be issued. In systematic reviews, this research utilized the EQUATOR elements and conducted a meta-analysis (PRISMA-ScR) (15). Abiding by the EQUATOR (Enhancing the quality and transparency of health research) guidelines, which is the Preferred Reporting system for systematic reviews and an extension of a Scoping review was established (or PRISMA-ScR). PRISMA-ScR was developed for reporting standard advancements. This research utilized reliable scientific methodical data that was available. The data analysis was conducted on the authentic and verified available resources.

There were five key stages of the review: each of them is listed below. A partial literature review on the topic indicated a lack of original basic research-based explicitly on mature and immature ovarian teratomas. This research included research related mature and immature ovarian teratomas in the analysis to reflect on the current material.

Step 1: Define the research question

The following information was gathered from the reviewed articles for this study:
What is the focus of the study?
What's the topic?
Will an ovarian teratoma in children have a special zone?
Who is better qualified to test for terratomas?
Are the gaps in the research?
What fields require more research?
Are their explanations in some areas for inadequate research?

Steps 2 and 3: Identify and select appropriate studies

The database scan was carried out, over a period of 1 month after a long preliminary analysis of MEDLINE (Medical Literature Analysis and Retrieval System Online), the deadline was determined, and the title and the alternate words used in the corresponding papers were established. Using the guidelines (16, 17) mentioned above, we have established a particular PubMed search strategy in consultation with committed librarians. The following electronic databases were searched: (1) PubMed, (2) Web of Science, (3) CINAHL (Cumulative Index to Nursing & Allied Health Literature), (4) Central Registry System of Cochrane Controlled Trials. A detailed study of the gray literature has also been done (Open Grey and Google). The search was limited to people whose abstracts are available in English from 1999-2019. The inclusion criteria and search strategy are summarized in Table 1. A small number of test samples were analyzed collectively by the analysis team, to ensure consensus in terms of the inclusion and exclusion criteria and to deal with misunderstandings in terms of the write up Figure 1 demonstrates the collection and search process.

Stage 4: Mapping of data

The data for the papers were saved in Excel. Detailed information was provided by the authors in terms of; year of publication, study venue, type of research (e.g. retrospective research), research community, research purpose, process, analysis, outcomes calculation, and performance. Armstrong et al. (18) have established the categories in this table.

Step 5: Compile, resume and report outcomes

The research reviewed some of the trends three separate steps were taken: (1) analysis, including numerical summative descriptive analysis and theme analysis; (2) report the results of general objectives or research issues. (3) Discuss the application of future research. The studies were classified by type of research background, the methods used and the overall results. The most important research points are discussed in the rest of this article hereunder. The analysis begins by identifying the gaps in information in the key issues.

Table 1: **Insertion conditions and search approach**

Inclusion condition	Only articles written in English • Report main findings • Dealing with childhood teratoma in the under 18 years age group • consider only teratoma (e.g., all germ cell tumors) • Period of study: 1999 to 2019
Keywords considered	Ovary, Neoplasms, Ovarian teratoma: Teratoma, Ovarian; Ovarian Neoplasms; Ovarian; Dermoid Cyst, Neoplasms; Ovary Teratoma; TeratoidTumor; Dysembryoma; Teratoma, Cystic; Benign; Teratoma, Teratoma, Malignant; Immature; Teratoma, Teratoma, Mature; Benign Neoplasms; Malignancy; Malignant Neoplasms; Neoplasia; Neoplasm; Neoplasms, Benign; Tumors

Ovary: Ovaries; Gonads
Child: Teenage; Child, Infantile; Infant; Children; Minors

Results

Figure 1: illustrates the most common symptoms presented by ovarian teratomas patients. Figure 2: illustrates the search process. In 11 regions, we found 23 studies. 18 history, 3 forward-looking studies and 3 experimental studies. Figure 3: Presented the number of articles found in each search criteria. There are 6 trials of two groups of tumors, namely mature, 5 immature and 13 trials. More than 50 patients participated in a total of 9 trials. Figure 1 shows the name of the journal, main author, the place of origin, year of publication, cover, the form of study, population, age group, Research group, objectives, general method overview, most relevant measurement findings and individual research findings.

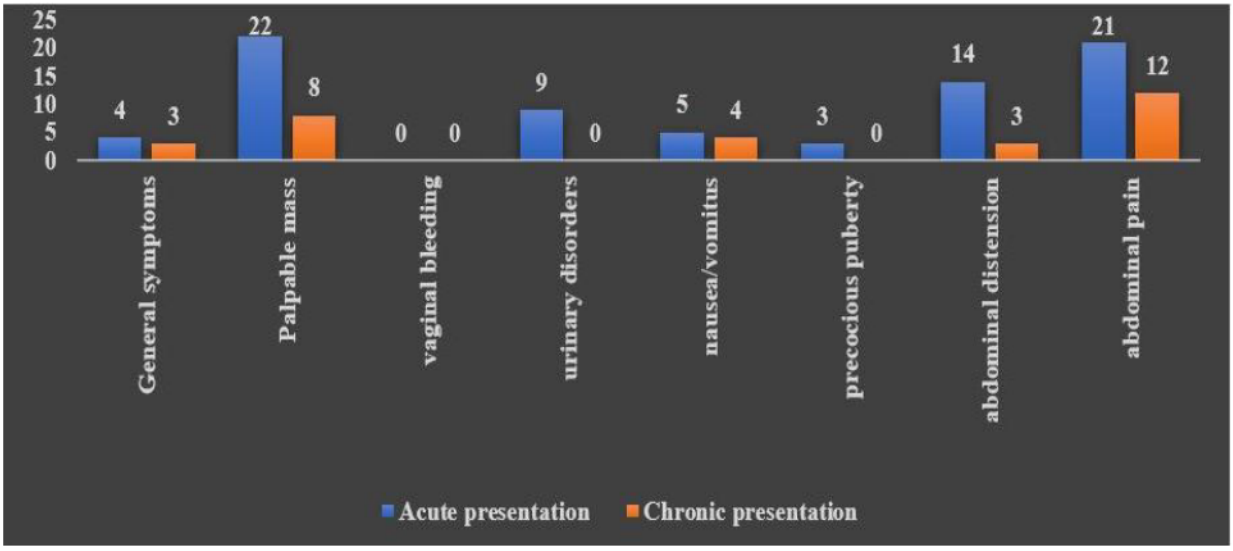

Fig. 1: Most common presented symptoms for ovarian teratomas

Number of patients

Our surveys have identified 7 key fields of research of pediatric ovarian teratomas: recurrence/recurrence and surveillance strategy, malignant potential, forecasted causes, cheap procedure, laparoscopy/laparotomy distinction., Chemotherapy and other lesion measures (immature and mature) to study the lesion condition. Since immature teratoma is a malignant teratoma, both CT-Scan and MRI show its characteristics and appearance. It is usually filled with fat lipid components which show fat density in CT-Scans and MRIs. On the other hand, mature ovarian teratoma can be diagnosed by using the USG. For severe cases a CT (computed tomography) is a better option for detecting the same. These concerns are a frequent concern of researchers. Other issues, less common or not recognizable as the primary topics for study, are as follows: the prevalence of documented types of disease, potential prescription therapies, the reverse biopsy, the usage and alterations in stadium procedures, the threshold for alpha-fetoprotein (AFP). The key topics can be found below for a detailed overview (4, 8, 19-40).

Incidence and follow-up plan for recurrence and recurrence. 4 types of the studies were focused on repetition and tracking techniques. In the remaining 13 studies, recurrence / recurrence rate and follow-up strategy were listed. 3 of the studies investigated mature teratomas and 4 investigated immature teratomas. In all these studies, repetition rates were reported. More than 50 patients participated in seven trials. No unified control technique exists. This was, however, only identified in 5 studies as a limiting factor. 4 publications note that the risk of ovarian teratoma, on the other hand, needs longer follow-up time (4, 8, 19-33). There are six outcomes of the literature survey which are listed below.

The potential is bad

A total of 7 studies established the key theme of malignant potential. There were two studies focusing on immaturity and five on advanced and intolerable teratomas. More than 50 patients were treated in three posts. In patients with malignant histology, two studies found immature teratomas. The pathology report is not final, however. The Cushing et al. study identified malignant recurrence of immature and high AFP patients. No malignant recurrence occurred in the chemical community in a German sample. Of 246 cases, Biskup et al. identified 6 malignant teratomas. Research except for patients with very high AFP (above 1000 ng/ml) showed gradation as the most relevant risk factor and that there was no clear recurrence of the immature ovarian teratoma and adjuvant chemotherapy. The research has, however, failed to apply comprehensive recurrence clinical reports (8, 22, 24, 27, 29, 30, 32).

Elements of prediction

This has been listed in three studies based on prognostic factors and in four other studies. These two forms are discussed in 7 articles. In all these articles,

repetition rates were reported. More than 50 patients participated in these three trials. Studies with good prognostic factors have shown that higher levels of AFP and older ages are linked to higher levels of immaturity. Recurrence, resection, or incomplete staging may be risk factors for patients who over-express p53 and p53. However, the need for further research in these areas has been underlined in all these studies (8, 21-23, 28, 30).

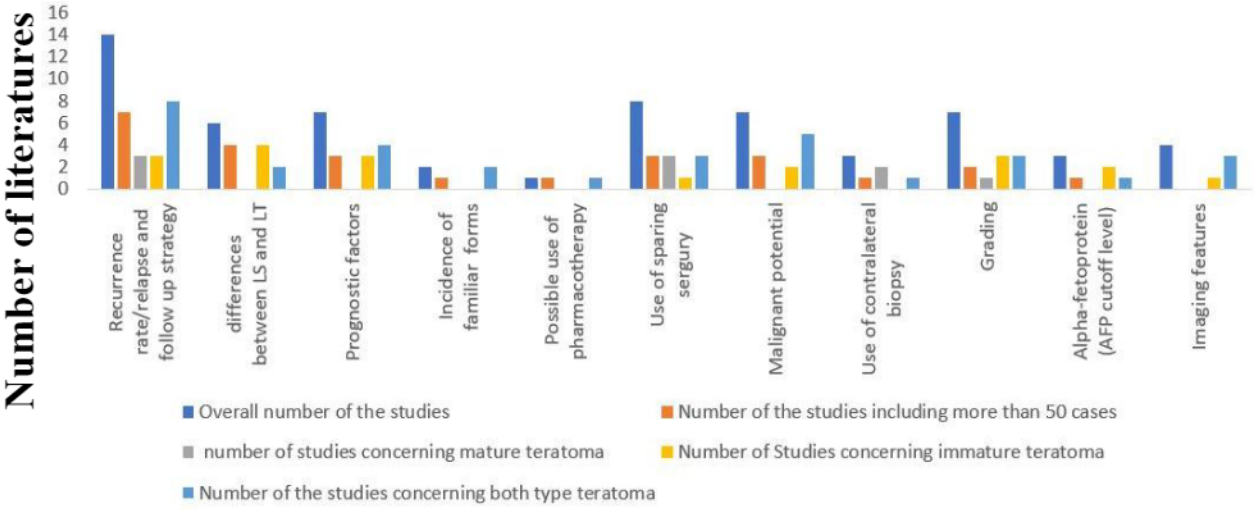

Figure 2: explaining the total studies in the journal and the related topics of the study

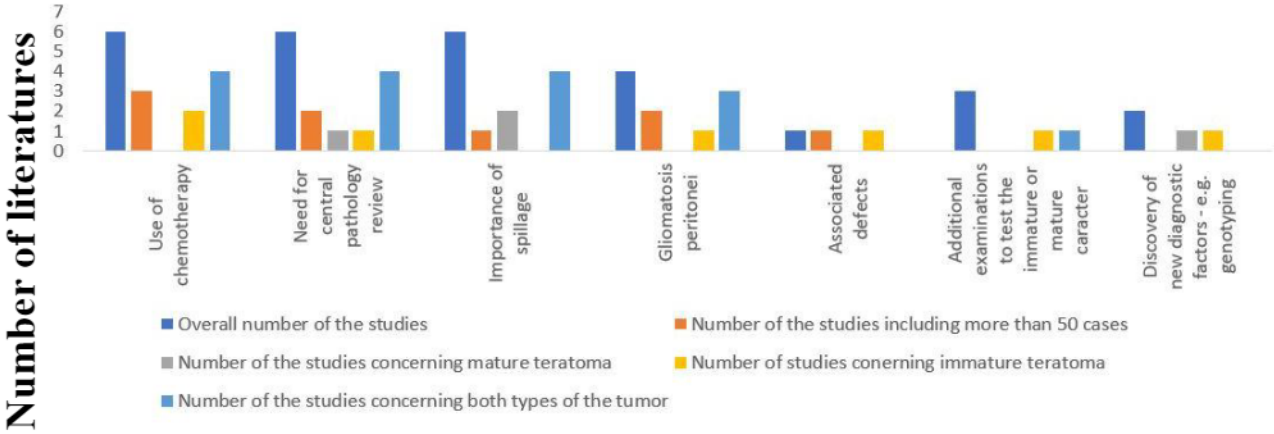

Figure 3: explaining the total studies in the journal and the related topics of the study

Laparoscopy and laparotomy disparity

Two studies have established the key themes as being the difference between laparoscopy and laparotomy. Two trials, only focused on immature teratomas, and in two, both forms were studied. Moreover, more than 50 patients were examined in four journals. No substantial correlation occurred between the type of procedure and dermoid recurrence in any of the analyses. One article found that laparoscopic patients had a shorter hospital stay. According to Savasi et al. and Childress et al. found considerably higher rates than the percentage of cyst breakouts found in laparoscopic cystectomy. These studies have also shown a slightly shorter stay time in the laparoscopy community than that of the laparotomy community. these studies lack a standardized guideline for the laparoscopy use in ovarian teratomas and the various operational techniques for cyst preparation which are listed, (4, 19, 20, 30, 35, 36).

Use of company transactions

Both studies were conservative, and six of them discussed conservative service. One of them referred to immature teratomas, three of which included mature teratomas. There were more than 50 patients in the three manuscripts. Oophorectomy (included only mature teratomas), except for two studies, which was dominant in all studies. The need to establish ovarian safety guidelines in ovarian teratoma is underlined in three studies(4, 21, 23, 31, 33, 35).

Chemotherapy use

As mentioned in Section 4 below, two studies suggested that chemotherapy was the main form of treatment. In two papers, immature teratomas were discussed, and in four articles, two forms were discussed. More than 50 patients participated in half of the paper. In the study mentioned above, only one malignant tumor recurrence occurs in the category of immature teratomas without post-operative

chemotherapy among children with high preoperative AFP. In the analysis by Göbel et al., the recurrence risk for mature and immature teratoma patients would be substantially reduced only after a full resection. Research on incomplete resection by Lo. Curto. et al has also been documented. A possible risk factor was chemotherapy and in 4 patients with incomplete resection in a study patient with grade II and III tumors. According to Pashankar et al, the most important recurrence factor was grade, and adjuvant chemotherapy, which did not minimize pediatric cohort recurrence. In the case of tumor recurrence or transformation, both studies have confirmed the need for chemotherapy. There is no study that can determine the true efficacy of chemotherapy mainly because the studies lack reliable methods of diagnosis and therapy (8, 24, 27, 30, 34).

More testing for immature or advanced features

This issue has been observed in two studies. In one study, two tumors were studied, while the other studied mature teratomas. The high absorption rate of Gallium 67 in benign teratomas is mentioned in a manuscript. According to study by Gu. et.al. revealed that glial fibrillary acidic protein (GFAP) is strongly expressed in mature tetratomic nerve tissues but weaker in immature teratomas (37, 38).

Discussion

This study enables us to examine the current literature in this field. The findings suggest a lack of research in the pediatric population on ovarian teratomas. There are numerous biological patterns, and many complicated conditions and therapies which are still caused by this category. In the nomenclature of these improvements in all studies, the ambiguous existence of certain tumors is also reflected. These changes are difficult to generalize (25, 41-45), especially with regards to the various names used for identifying immature teratomas (imperative teratomas, malignant teratoma, teratomas with malignant elements, immature teratomas with malignant behavior). We mainly emphasize on treatment and diagnosis, some of the research focused on fundamental science to investigate the true existence of these lesions. Moreover, less than half of the trials of more than 50 patients were retrospective. The main drawback of studying this issue is that all childhood diseases have low incidences of ovarian teratomas. Often, adult girls may be referred to the department of gynecology, which is for adults, and therefore no pediatric database exists for this sample.

What is the most important subject by addressing two study questions, and can some areas of ovarian teratoma be more extensively studied than others?

In comparison, it seems simpler and more frequent to investigate the actual diagnosis and treatment of ovarian teratomas compared with assessing the existence and actions of ovarian teratomas by forward-looking and experimental studies. The study issues are always unanswered in most studies, and the need for more research is highlighted. Furthermore, almost every analysis has limitations. Moreover, we must not ignore the absence of clear approaches of study for diagnosis, treatment, and observation. The adult population and the lack of new research are other big obstacles. For several years, pediatric surgeons have also been following the treatment guidelines established for adult patients. But in the pediatric population, there is a major gap between the epidemiological and clinical disposition in the ovarian tumors and women. This direct metastasizing therapy seems unlikely (46, 47). Child ovarian teratoma study appears to be quite complicated as all features are correctly pathologically defined. The right pathology report is critical in this situation. A central pathomorphological exam can be useful, as stated in some studies (2, 24-27, 29, 31, 37). Teratomas exhibit different biological behaviors and persistence causes many diagnostic and treatment problems Approximately 25% of pediatric GCT (germ cell tumors) are present, rather than having more than one histological type of tumor, the situation, treatment, and prognosis depend on the components (3, 25, 41, 48). Based on this; pure immature teratomas can be ruled out. In the latest research on childhood malignancies, embryonic tumors are different from patients' Malignant germinal tumors, even if they are lesions. Even though they may contain elements of developed or undeveloped teratoma, they are not suitable for teratoma research only (41, 42). Examination is also regarded young trauma Teratoma, even when the pathology report indicates another malignant tumour component (43). The character of the discussion on this topic is also represented in the naming of these modifications, which is based on research. The terms used to refer to the different types of teratomas (Malignant elements, Undeveloped teratoma, malignant teratoma, teratomas and malignant tumors Behavior) make the classification generally applicable, even though these injuries are very problematic (44, 45). The application of methods for scope evaluation is especially useful because it is not restricted to specific requirements for inclusion. There are different limitations, however, related research could not be found. Further details can be given in the quantitative overview. Our capacity to solve this problem is impaired by the fact a wider sample group (e.g. all ages, all ovarian teratomas, or all embryonic tumors) was not incorporated—a study on minimal subjects.

Conclusion

Operating in the ovarian pediatric teratoma database, the study identified several knowledge gaps. Albeit, there are certainly a number of shortcomings in conducting this study. It is expected that more research should be undertaken soon in this field. It is not by chance that contemporary medicine, i.e. The main key to excellent medical practise, is evidence-based medicine and informed clinical decision-making. The analysis showed that the future-oriented architecture, the high-quality framework, and the number of studies per organization were not adequate. Finding out the most appropriate treatment and developing new approaches and therapies enables a study to further understand the pathology, genetics, and prognostic factors of ovarian teratoma in children. Additional analysis is required to assess and analyze the possible harm of current therapies.

Conflict of Interest: The authors have no conflict of interest with this manuscript.

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