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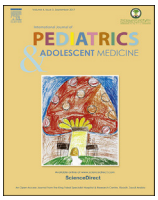

Full length article

Ovarian lesions among pediatric patients: A tertiary center experience (1997–2016)

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ABSTRACT

Introduction: Ovarian lesions are not commonly seen in pediatric females; however, there are some reported cases among different pediatric age groups. Ovarian lesions can show, clinically, in many diverse presentations, and the treatment chosen may be conservative or surgical, accordingly. In this study, we aim to find ovarian lesions commonly operated on and their histopathological and clinical characteristics among pediatric patients at tertiary center in Riyadh, Saudi Arabia.

Material and methods: A retrospective review of medical records of all pediatric patients (aged 14 or younger) who underwent surgical removal of ovarian lesions from January 1997 to August 2016 at King Abdulaziz Medical City, Riyadh, Saudi Arabia was conducted.

Results: Records for a total of 14 girls with a mean age of 5.7 ± 5.1 years were reviewed. The most common clinical presentation was acute abdominal pain (n = 5, 35.7%). There were four patients without any complaints who were diagnosed incidentally (28.6%). More than half of the patients underwent laparoscopy (n = 8, 57.1%) and cystectomy procedures were performed on 50% of the patients (n = 7). Simple ovarian cysts (n = 5) were the most common ovarian lesions followed by mature cystic teratomas (n = 3) with 35.7% and 21.4%, respectively. Furthermore, simple ovarian cysts were more common among infants. There was only one death reported and she had been diagnosed with a mixed germ cell tumor.

Conclusion: The majority of ovarian lesions in the studied pediatric patients were benign. The most common lesions were simple ovarian cysts. Abdominal pain was the most common presenting symptom.

1. Introduction

Ovarian lesions are not very common in pediatric females; however, some cases have been reported among different pediatric age groups. Ovarian lesions can be diagnosed in fetal life and present in the early days of life [1]. They can also appear in childhood among premenarchal girls [2,3]. Ovarian lesions can be classified as neoplastic and non-neoplastic lesions (e.g. cysts) [4]. The neoplastic lesions are further classified as benign (e.g. mature teratomas and cystadenoma) and malignant (e.g. granulosa and small cell tumors) [4].

In a study including 240 patients during a period of 14 years, the occurrence of non-neoplastic ovarian lesions was more than 50% [5]. A study conducted in New Zealand showed that the paratubal cyst was the most common of ovarian non-neoplastic lesions and mature cystic teratomas were the most common of neoplastic lesions [6]. In India, the most common malignant ovarian lesion was

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dysgerminoma and the second was immature teratoma [7].

Ovarian lesions have different clinical presentations, commonly presenting with abdominal pain, mass and ovarian torsion [6,7]. In many settings, patients are recommended to have their ovarian lesions surgically treated [8,9]. However, some type of lesions could be treated conservatively [8], particularly in incidentally discovered ovarian lesions [10].

There is limited data clarifying the various types and presentations of pediatric ovarian lesions in Saudi Arabia. In the present study, we aim to find the common surgically removed ovarian lesions and their histopathological and clinical characteristics among pediatric patients in a tertiary healthcare center in Saudi Arabia.

2. Materials and methods

2.1. Data source

The sole data source was a retrospective chart review of all female pediatric patients who underwent laparotomy or laparoscopy for ovarian lesion removal through different surgical procedures at the pediatric surgery department in King Abdulaziz Medical City (KAMC), Riyadh, Saudi Arabia between 1997 and 2016. KAMC is a tertiary health care center and a referral center for the central areas in Saudi Arabia. Pediatric patients aged 14 years or younger were included. Patients who only had ovarian torsion without ovarian lesions, patients treated conservatively (non-operative treatment) for ovarian lesions, or patients who only had polycystic ovarian syndrome without surgery were excluded (n = 16). Before starting the study, ethical approval was acquired from the Institutional Review Board (IRB) at King Abdullah International Medical Research Center (KAIMRC). Data was obtained from the patients' paper and electronic files in the hospital's information system then transferred to data collection form and entered into the SPSS database.

2.2. Data collection

The data collection form contained demographic data, clinical data, imaging and surgical data. This form was created to collect the following: age at time of surgery; height and weight for body mass index (BMI); mode of admission; different clinical presentations; diagnosis modality, including prenatal diagnoses; type of surgery and procedure; post-operative diagnosis of the lesion; and size of lesion.

2.3. Statistical analysis

Analysis was performed using SPSS, version 22.0 (IBM Inc.). Numeric data, including age, BMI and size of the lesion were presented as mean ± standard deviation (SD). For categorical variables, percentage and frequency were used.

3. Results

A total of 14 cases were diagnosed and operated on for different ovarian lesions during the study period. Mean age was 5.7 ± 5.1 years at the time of operation with a mean BMI of 14.9 ± 2.6 kg/cm^2. Almost all of them were Saudis (n = 13, 92.9%).

The most common presenting complaint was acute abdominal pain (n = 5, 35.7%) followed by chronic abdominal pain (n = 4, 28.6%). A total of two patients presented with ovarian torsion (14.3%). However, four patients did not have any complaints and were diagnosed incidentally (28.6%). Other clinical presentations are listed in Table 1. Endocrine disturbance and precocious puberty were only seen in a patient diagnosed with juvenile granulosa cell tumor.

Ultrasound (US) was the most common mode of diagnosis of ovarian lesions among all patients. Four patients (28.6%) were diagnosed prenatally and all of them had simple ovarian cysts. Less than half of the patients were diagnosed with the help of computed tomography (CT) (n = 6, 42.9%) and one patient using magnetic resonance imaging (MRI) (7.1%).

More than half of the patients underwent laparoscopy (n = 8, 57.1%) and the other seven patients underwent laparotomy. A cystectomy procedure was performed on 50% of the patients (n = 7). The remaining implemented procedures are shown in Table 2.

The most common encountered ovarian lesions were simple ovarian cyst lesions followed by mature cystic teratomas with 50% (n = 7) and 21.4% (n = 3), respectively (Table 3). Simple ovarian cysts were more common among infants (younger than one year old) (n = 4, 80%), whereas, mature cystic teratomas were more common among children (older than one year and younger than 12 years) (n = 2, 66.3%). The mean size of the lesions was 6.2 + 1.7 cm. The lesions were distributed equally among both right and left ovaries (n = 7, 50%).

Only one death was reported and the patient had right open salpingo-oophorectomy with the diagnosis of mixed germ cell tumor.

4. Discussion

Although ovarian lesions in pediatric patients are considered a rare finding, they vary in their clinical presentation and epidemiology in different areas worldwide. In this study, resected ovarian lesions reported in pediatric patients over a period of 19 years were reviewed to find the common ovarian lesions and their clinical characteristics. With respect to the research question, the most common ovarian lesions were found to be non-neoplastic in origin. This finding matches those observed by Cribb B et al. in an earlier study [6]. The non-neoplastic lesions found in this study included simple ovarian cysts, para-ovarian cysts and hemorrhagic cysts.

In the present study, the most common resected ovarian lesion was a simple ovarian cyst. This finding is contrary to previous studies which have determined paratubal cysts as the most common ovarian non-neoplastic lesions [6]. In another study conducted in Pakistan, half of the girls with non-neoplastic ovarian lesions had simple ovarian cysts [11].

The current study found that abdominal pain was the most frequent symptom of complaint either in its acute or chronic form. This outcome is contrary to that of Sheikh MA et al. who found that abdominal pain was the second most frequent presentation after abdominal mass [11]. On the other hand, there were four asymptomatic patients who were diagnosed incidentally.

In this study, it was determined that all patients underwent US to initiate the diagnosis. A possible explanation for this could be that US was readily available and the child is not exposed to radiation. Another possible explanation that US might be used to diagnose the cases in utero and in the current study there were four patients diagnosed prenatally. The other diagnostic modalities in this study, including CT and MRI, were used only if there was a suspicious diagnosis.

The preservation of the ovary (cystectomy) procedure was performed among half of the patients. These results differed from findings by Chu SM et al. who observed that the most frequent procedure was salpingo-oophorectomy [12]. These results were likely to be related to whether the lesions were benign or malignant and the size of the lesion. That's may be explained by that majority of the patients in the present study had benign lesions and underwent cystectomy.

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