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RETROSPECTIVE ANALYSIS OF THE OVARIAN DERMoids VIA RADIOGRAPHIC EVALUATION: A CLINICAL STUDY

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ABSTRACT

Background: Of all ovarian neoplasms, ovarian dermoids account for around 15% to 20% of cases. Females in the reproductive age range, particularly in their second and third decades of life, are prone to ovarian dermoid. Ovarian dermoid tumors are slow-growing growth tumors made up of different components from different levels of germ cells. Ultrasonography, or USG, is typically used to identify ovarian dermoid; MRI and CT scans provide a more thorough evaluation.

Aim: The purpose of this study was to assess ovarian cancers radiographically using imaging data from various radiological modalities.

Methods: MRI, CT, or USG diagnoses of ovarian dermoid patients were made by the institute's Department of Radiodiagnosis. A minimum of two highly qualified radiologists evaluated the imaging data. The collected data were evaluated statistically in order to formulate the results.

Results: Of the 20 study participants, 62.5% (n = 20) had right side ovarian dermoids, 25% (n = 8) had left side, and 12.5% (n = 4) had bilateral ovarian dermoids. In 65.62% (n=21) of the study patients, the lesion size was 6-10 cm. In 15.62% (n=5) of the study subjects, it was 0-5 cm, and in 12.5% (n=4) of the study subjects, it was 11-15 cm. Three percent (n = 1) of the study subjects had lesions measuring between 15-20 and 25 cm. Of the study individuals, 40.62% (n=13) underwent ultrasonography, 15.62% (n=5) underwent CT, and 12.5% (n=4) underwent MRI. The study patients who underwent ultrasonography with computed tomography were 25% (n=8), those who underwent ultrasonography with magnetic resonance imaging (MRI) were 3.12% (n=1), and those who underwent CT with MRI were also 3.12% (n=1), respectively.

Conclusion: The current study shows that ovarian dermoid can be easily detected by ultrasonography; however, instances involving problems should be evaluated further using MRI or CT.

Keywords: radiological assessment, CT, MRI, ovarian dermoid, USG introduction

INTRODUCTION

Ovarian dermoids are the most frequent type of ovarian tumor, accounting for around 15-20% of all ovarian neoplasms. A minimum of two or three well-differentiated tissue types of germinal cells from endoderm, mesoderm, or ectoderm make up these dermoids.

Almost 90% of the time, ovarian dermoids contain mesodermal tissues like cartilage, bone, fat, and muscles. They also typically contain endodermal tissues like thyroid tissue, bronchial epithelium, gastrointestinal mucinous epithelium, and others. Mature tissues of ectodermal origin are almost always present in ovarian dermoids.¹

Monodermalteratoma, immature teratoma, and mature cystic teratoma are the three primary forms of ovarian dermoids. Typically observed in females within the reproductive age range, mature cystic teratomas or dermoid cysts

account for about 60% of ovarian neoplasms. Dermoids on both sides are typically present in minor amounts and are typically unilateral. Mature cystic teratoma subjects typically show no symptoms. Subjects with symptoms, however, report lower stomach pain and irregular menstruation. Because ovarian dermoids grow slowly, surgical intervention is only necessary when the tumors have accompanying problems or measure more than 6 cm in diameter.

Less than 1% of occurrences of ovarian neoplasms are immature teratomas, which typically affect younger people. Large immature teratomas are typical, and serum alpha protein levels are elevated in almost half of the individuals. Most immature teratomas are malignant; upon follow-up, over 30% of cases develop into malignancies. Conversely, monodermoid teratomas, which are uncommon, can contain brain tumors, carcinoid tumors, or struma ovarii. Ovarian dermoids can cause complications such as rupture, torsion, ovarian vein thrombophlebitis, or malignant degeneration.³

Ultrasonography (USG) is typically utilized as a screening method for radiographic evaluation of the ovarian dermoids, whereas computed tomography (CT) is used for further assessment due to its higher sensitivity. Magnetic resonance imaging (MRI) can be performed in some circumstances, such as pregnancy, and the results can be compared to CT and USG. Rokitansky protuberances or echogenic sebaceous material are considered standard observations in ultrasonography-calcified materials; on CT scanning, fat density <20HU is a diagnostic result. Other common abnormalities on CT images include fat-fluid lines with gravity-dependent layering and protrusions resembling palm trees. Sebaceous material is visible on T1 W pictures of MRIs, which resemble suppressed and hyperintense FAT SAT images. The cyst's hemorrhagic contents are not, however, inhibited.⁴

The current retrospective clinical study was carried out to assess ovarian cancers radiographically using imaging data from various radiological modalities.

MATERIALS AND METHODS

The current retrospective clinical study was carried out to assess ovarian cancers radiographically using imaging data from various radiological modalities. The participants who visited the Institute's Department of Radiodiagnosis for ovarian dermoids made up the study population. All study participants gave their informed consent after being fully told about the study's design.

Thirty-two female individuals, with a mean age of 32.2 ± 4.36 years and a confirmed diagnosis of ovarian dermoids, were included in the study. Females between the ages of 21 and 40 who had a confirmed diagnosis of ovarian dermoids and comprehensive medical and radiological records met the study's inclusion criteria. The study's exclusion criteria included patients who were unwilling to participate, lactating females, and those with insufficient medical and radiological data.

The study comprised thirty-two female participants who had a confirmed diagnosis of ovarian dermoids with a mean age of 32.2 ± 4.36 years. The study's inclusion criteria were met by women between the ages of 21 and 40 with a confirmed diagnosis of ovarian dermoids and complete medical and radiological records. Patients who refused to participate, women who were nursing, and those with insufficient radiological and medical information were among the exclusion criteria for the study.

Using SPSS software version 21 (Chicago, IL, USA) for statistical assessment and one-way ANOVA and t-test for result formulation, the gathered data were examined. The data were presented as a mean, standard deviation, percentage, and number. At $p < 0.05$, the significance threshold was maintained.

RESULTS

Using imaging data from various radiological modalities, the current retrospective clinical investigation evaluated ovarian cancers radiographically. Thirty-two female individuals, with a mean age of 32.2 ± 4.36 years and a confirmed diagnosis of ovarian dermoids, were included in the study. Table 1 contains a list of the study individuals' demographic details.

84.37% ($n = 27$) of the study individuals were between the ages of 21 and 30, while 15.62% ($n = 5$) were between the ages of 31 and 40. Lower abdominal pain and swelling was the most common presenting symptom reported by the study participants, accounting for 43.75% ($n=14$). Asymptomatic subjects reported presenting 25% ($n=8$), ovarian torsion reported 15.62% ($n=5$), menstrual irregularities reported 9.37% ($n=3$), and infertility reported by 6.25% ($n=2$) study participants were the least common presenting symptoms, as Table 1 illustrates.

Upon radiographic examination of the study participants utilizing various modalities for ovarian dermoids, it was observed that 40.62% ($n=13$) of the study subjects underwent ultrasonography, 15.62% ($n=5$) underwent CT, and 12.5% ($n=4$) underwent MRI. A total of 25 ($n=8$) study participants underwent computed tomography with ultrasonography, 31.2 ($n=1$) study subjects underwent ultrasonography with magnetic resonance imaging, and 3.12% ($n=1$) study subjects underwent CT with MRI. As shown in Table 2, no research subject underwent a combination of all three modalities of ultrasonography, computed tomography, and magnetic resonance imaging.

After evaluating the different factors associated with the ovarian dermoids in the study subjects, it was observed that, in terms of laterality, 62.5% ($n=20$) of the study subjects had ovarian dermoids on the right side, 25% ($n=8$) had ovarian dermoids on the left side, and 12.5% ($n=4$) had ovarian dermoids on both sides. In 65.62% ($n=21$) of the study patients, the lesion size was 6-10 cm. In 15.62% ($n=5$) of the study subjects, it was 0-5 cm, and in 12.5% ($n=4$) of the

study subjects, it was 11-15 cm. Table 3 displays the lesion sizes of 15-20 cm and 21-25 cm in 3.12% (n=1) of the study individuals.

DISCUSSION

The current retrospective clinical study was carried out to assess ovarian cancers radiographically using imaging data from various radiological modalities. Thirty-two female individuals, with a mean age of 32.2 ± 4.36 years and a confirmed diagnosis of ovarian dermoids, were included in the study. 84.37% (n = 27) of the study individuals were between the ages of 21 and 30, while 15.62% (n = 5) were between the ages of 31 and 40.

Lower abdominal pain and swelling was the most frequently reported presenting symptom by study participants, accounting for 43.75% (n=14). Asymptomatic subjects reported this symptom most frequently, at 25% (n=8), ovarian torsion accounted for 15.62% (n=5), menstrual irregularities for 9.37% (n=3), and infertility was reported by 6.25% (n=2) study participants. The study's demographics were similar to those of studies conducted in 2001 by Albayram F et al. and Outwater EK et al., where the authors evaluated people with similar demographics to the current study.

Regarding the radiographic evaluation of the study participants using various modalities for ovarian dermoids, it was observed that 40.62% (n=13) of the study subjects underwent ultrasonography, 15.62% (n=5) underwent CT, and 12.5% (n=4) underwent MRI.

A total of 25 (n=8) study participants underwent computed tomography with ultrasonography, 31.2 (n=1) study subjects underwent ultrasonography with magnetic resonance imaging, and 3.12% (n=1) study subjects underwent CT with MRI. In no research subject was a combination of computed tomography, magnetic resonance imaging, and ultrasound performed. These findings were in line with those of Ding D et al. (2007) and Hoo W et al. (2010), whose authors reported radiographic diagnoses of ovarian dermoids that were comparable to those of the current investigation.

Upon evaluating different aspects associated with ovarian dermoids in research participants, it was observed that in terms of laterality, 62.5% (n=20) of the subjects had ovarian dermoids on their right side, 25% (n=8) had ovarian dermoids on their left side, and 12.5% (n=4) had ovarian dermoids on both sides. Lesion sizes ranged from 0 to 5 cm in 15.62% (n=5) study individuals, 11 to 15 cm in 12.5% (n=4) study subjects, and 6 to 10 cm in the majority of study subjects (65.62%, n= 21). 3.12% (n=1) of the trial subjects each had lesions measuring between 15-20 and 21-25 cm. The findings aligned with research conducted by Laberge PY et al. (2006) and Zupi E et al. (2003), who found similar contributing factors to ovarian dermoids as the current study.

CONCLUSION

Within its limitations, the present study concludes that ultrasonography can readily detect ovarian dermoids, whereas, the cases with complications should further be assessed on MRI or CT. The present study had a few limitations including small sample size, shorter monitoring period, and geographical area biases. Hence, more longitudinal studies with a larger sample size and longer monitoring period will help reach a definitive conclusion.

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TABLES

S. No	Characteristics	Percentage (%)	Number (n=32)
1.	Mean age (years)	32.2±4.36	
2.	Age range (years)	20-40	
a)	21-30	84.37	27
b)	31-40	15.62	5
3.	Presenting symptoms		
a)	Infertility	6.25	2
b)	Menstrual irregularities	9.37	3
c)	Ovarian Torsion	15.62	5
d)	Asymptomatic	25	8
e)	Lower abdominal pain and swelling	43.75	14

Table 1: Demographic and disease characteristics of the study subjects

S. No	Radiographic evaluation	Percentage (%)	Number (n=32)
1.	USG	40.62	13
2.	CT	15.62	5
3.	MRI	12.5	4
4.	USG with CT	25	8
5.	USG with MRI	3.12	1
6.	CT with MRI	3.12	1
7.	USG, CT, and MRI	0	0

Table 2: Radiographic evaluation using different modalities in the study subjects

S. No	Study factors	Percentage (%)	Number (n=32)
1.	Laterality		
a)	Right	62.5	20
b)	Left	25	8
c)	Bilateral	12.5	4
2.	Lesion size (cm)		
a)	0-5	15.62	5
b)	6-10	65.62	21
c)	11-15	12.5	4
d)	15-20	3.12	1
e)	21-25	3.12	1

Table 3: Factors of ovarian dermoids in the study subjects