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Radiopathological Correlation of Adnexal Lesions: Our experience

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Abstract
Background: *Adnexal masses are considered one of the most common disorders in gynecology practice. Primary goal of imaging in the evaluation of an adnexal mass is to differentiate malignant and benign lesions in order to direct patients to the appropriate treatment algorithm.*
Aim: *To study the spectrum of diverse nature of adnexal mass lesions. To assess the relative role of USG and MRI in the evaluation of adnexal mass lesions, and compare them with clinical outcome or operative findings wherever possible.*
Materials and Methods: *This prospective study was conducted on 50 patients who are clinically suspected to have adnexal lesions. USG and MRI using standard protocol are performed in all patients with adnexal lesions and various features of adnexal lesions were noted.*
Results: *Most commonly affected age group was 21-40 yrs. The major presenting complaints were lower abdominal pain and lump in the lower abdomen. In our study, most common origin of adnexal lesions was from ovaries. On USG, 50 % were cystic in consistency, 86 % and 14 % were reported as benign and malignant respectively. On MRI, 56 % were cystic, 88% and 12 % were reported as benign and malignant respectively.*
Conclusion: *The sensitivity of MRI and USG for diagnosing malignancy of adnexal lesions is similar. However, due to better specificity and lower false positivity rate, higher sensitivity in detecting invasion of adjacent organs and organs of origin of lesions, MRI may be considered complimentary for optimal patient management and can be used in the assessment of problematic cases.*
Keywords: *Magnetic Resonance Imaging, Ultrasound, Cystadenoma, Krukenberg Tumour, Endometrioma,*

Introduction

Adnexal masses are considered one of the most common disorders in gynecology. The lesions of adnexal origin constitute one of the leading cause of female morbidity, a less common cause of mortality and a frequent reason for gynecologic surgery. The prevalence of adnexal lesions in the general population is 0.17%–5.9% in asymptomatic women and 7.1%–12% in symptomatic women. Adnexal region is composed of ovary, fallopian tube, broad ligament, and associated blood vessels and nerve structures. Ovarian tumors alone represent two thirds of these cases. Ovarian cancers are one of the most lethal of all gynecological cancers, as they are characterized by late presentation and poor response to treatment. The main challenge to the radiologist is to differentiate benign from malignant adnexal lesions in order to direct

patients to the appropriate treatment algorithm. Determining whether a clinically diagnosed adnexal lesion is benign or malignant is frequently not possible until surgical exploration and histological examination are performed. Management options include radical staging surgery for suspected ovarian malignancy and less invasive surgery (i.e., laparoscopy) for potentially benign neoplasms. Sonography is the initial choice for imaging study in the evaluation of women with suspected adnexal masses. However, sonography is limited by its decreased specificity for the diagnosis of benignity. Main disadvantage of ultrasound is that the field of view is limited and also sometimes the presence of bowel gas obscures proper visualization of the pelvic organs. Magnetic resonance imaging has demonstrated considerable potential in pelvic imaging. Soft tissue contrast is inherently better in magnetic resonance imaging than in ultrasound and can be improved by the use of varying pulse sequences. It has high sensitivity and specificity for differentiating benign pelvic masses from malignant ones.

Methods

The subjects of this study were patients who are clinically suspected to have adnexal lesions or detected with adnexal lesions incidentally on USG. The study will be performed on all patients after written informed consent. USG and MRI are performed in all patients with adnexal lesions.

The cut off value of CA-125 level for classifying benign and malignant lesions was taken as 35 IU/ML. The cut off value of size of lesions for classifying benign and malignant lesions was taken as 4 cm.

The patients having cardiac pacemakers, prosthetic heart valves, cochlear implants or any metallic implants were excluded from study. The patients having history of claustrophobia were also excluded.

MR imaging was performed on a 1.5-T MR imaging unit. Patients were kept fasting for at least 3-4 hrs prior to examination. The following sequences were obtained: axial T1-weighted spin-echo MR imaging from the renal hilum to the symphysis pubis or beyond if necessary to cover the larger adnexal masses and abdomen, axial T2-weighted fast spin-echo MR imaging of the pelvis or beyond if necessary to cover the larger adnexal masses and abdomen; sagittal T2-weighted fast spin-echo imaging from one femoral head to the other. Unenhanced and enhanced (where required) fat-suppressed spoiled gradient-echo T1-weighted imaging will be performed in the best plane for visualizing the particular adnexal lesions. Contrast-enhanced images were obtained after IV injection of 0.1 mmol/kg of gadopentetate dimeglumine.

The MR images were evaluated without knowledge of the surgical or pathologic findings. The MR imaging features were then correlated with the surgical and pathologic findings wherever possible. The imaging features documentation included the number of adnexal masses per patient, origin of lesion (ovarian, uterine, tubal, tubo-ovarian or extra-ovarian), lesion shape, lesion size, and content of lesion (solid only, complex solid–cystic, and cystic only). If a wall and internal septae could be identified, its thickness, character, and enhancement will be noted. The septal characteristics including the number, thickness, character (smooth or irregular), and enhancement of the septa were recorded. Any vegetation appearing on the wall or the septum of the lesion were measured and noted. Tissues with low signal intensity on T2-weighted MR images (i.e., ≤ signal intensity of skeletal muscle) were also noted. Such low-signal-intensity tissue is indicative of fibrous tissue. Patients who were not operated or lost to followed, the imaging features were described.

USG is done before or after the examination of MRI and operative and histopathological findings were noted wherever possible.

Results

A total of 62 adnexal lesions were detected in 50 patients on MRI. Out of 50 patients, 26 patients (31 adnexal lesions) were operated and these findings on MRI and USG were correlated with operative and histopathological findings. Out of remaining 24 patients, 10 patients (11 lesions) were followed

up with either USG or MRI for change in size/characteristics/stability of lesions with or without treatment. Remaining 14 patients were not operated and were also lost to follow up and were analysed only on basis of imaging findings.

One patient had B/L ovarian lesions and unilateral tubal and another one patient and bilateral tubo-ovarian lesions and unilateral ovarian lesion which were counted as 3 lesions in each patient.

The most common symptom observed in 50 patients was pain abdomen (80%) followed by abdominal distension (66%) and bleeding per vaginum (62%). The constipation and dysurea were also seen in few patients. The most common age group encountered was 21-40 yrs and 50% adnexal lesions (31out of 62 lesions) were seen in this age group. Out of total 8 malignant adnexal lesions, 7 were seen >40yrs and only one <40yrs.

Investigation of CA-125 in 35 patients with adnexal lesions, revealed that out of 5 patients with malignant lesions, 4 patients had raised (>35 IU/ML) CA-125 level (80%). One patient with serous cystadenocarcinoma had low level of CA-125. Out of total 30 benign lesions 27 had low level (90%) and 3 had raised level (>35 IU/ML) of CA-125 (10%). The benign adnexal lesions with raised CA-125 were 2 endometriomas and 1 cystadenoma.

Analysis of various features of benign and malignant adnexal lesions on MRI

Analysis of 50 patients with 62 adnexal lesions on MRI had revealed that 40 patients (80%) had unilateral lesions and 10 patients (20%) had bilateral adnexal lesions. Out of total 40 patients with unilateral lesions, 6 patients had malignant lesions (15%) and out of total 10 patients with bilateral lesions, 1 patient had malignant lesions (10%). Out 62 adnexal lesions detected on MRI, 39 lesions were ovarian in origin (62.90%), 12 uterine in origin (19.4%), 4 tubal (6.5%), 4 tubo-ovarian (6.5%) and 2 in extraovariane-extrauterine (3.2%). One adnexal lesion on MRI (1.6%) was not determined whether from ovarian or uterine in origin.

Table 1: Size of adnexal lesions in 50 patients in benign and malignant on MRI (n=62 lesions).

Size of adnexal lesions	Total	<4cm		>4cm	
		Number	%	Number	%
Benign	54	17	31.4	37	68.5
Malignant	8	2	25	6	75

Table 2: Types of content in benign and malignant adnexal Lesions on MRI (n=62 lesions)

Content	Total	Benign		Malignant	
		No.	%	No.	%
Solid	15	11	73.3	4	26.7
Complex solid cystic	8	5	62.5	3	37.5
Cystic	39	38	97.4	1	2.5

Table 3: Wall/ septum characteristics in benign and malignant adnexal lesions of cystic and predominantly cystic lesions on MRI (n=44 lesions)

Characteristics	Total	Benign		Malignant	
		No.	%	No.	%
Thin and smooth without septa	22	22	100	0	00
Thin and smooth with septae	14	14	100	0	00
Thick and smooth without septa	0	0	-	0	-
Thick and smooth with septae	4	4	100	0	00
Thick and irregular with septae	4	3	75	1	25

Table 4: Papillary projection / mural nodules in benign and malignant cystic adnexal lesions on MRI (n=40 lesions).

Papillary projection / Mural Nodules	Total	Present		Absent	
		No.	%	No.	%
Benign	39	2	5.1	37	94.8
Malignant	1	1	100	0	00

Table 5: Fat planes with adjacent organs in benign and malignant adnexal lesions on MRI (n=62 lesions).

Fat planes with adjacent organs	Total	Lost		Maintained	
		No.	%	No.	%
Benign	54	0	00	54	100
Malignant	8	3	37.5	5	62.5

Table 6: Omental caking / nodules in benign and malignant adnexal lesions on MRI (n=50 Patients)

Omental caking/ nodules	Total	Present		Absent	
		No.	%	No.	%
Benign	43	0	00	43	100
Malignant	7	1	14.2%	6	85.7

Out of total 54 benign adnexal lesions, 17 lesions (31.4%) were < 4 cm in size and 37 lesions (68.5%) were >4 cm in size. Out of total 8 malignant lesions, only 2 lesions (25%) were < 4 cm in size and 6 lesions (75%) were >4 cm in size. The 2 malignant adnexal lesions with <4cm in size were not ovarian in origin. These were carcinoma cervix with exophytic component and metastatic deposit in adnexal region from carcinoma endometrium. All ovarian malignant lesions were>4cm in size (Table 1).

Out of 8 malignant adnexal lesions, 7 lesions (87.5%) were either solid or complex solid-cystic. One adnexal malignant lesion was cystic with thick irregular wall and septae (serous cystadenocarcinoma). All solid benign adnexal lesions were subserosal / broad ligament leiomyomas / intramural leiomyomas large exophytic component / hematoma with large exophytic component. Benign complex solid cystic lesions were leiomyomas with degenerative changes and dermoid cysts. Out of 39 cystic lesions, 38 lesions (97.4%) were benign (Table 2). One cystic lesion with thick and irregular wall was malignant. One patient with 2 bilateral adnexal lesions with thick and irregular wall was cystadenoma on histopathological examinations and patient also had normal CA 125 level. One lesion with thick and irregular wall was large degenerated leiomyoma (Table 3).

Out of total 16 benign solid and complex-solid-cystic adnexal lesions, 7 lesions (43.7%) had necrosis. Out of total 7 malignant adnexal lesions, 5 lesions had necrosis (71.4%). Benign lesions with necrosis were large leiomyomas. Malignant adnexal lesions with necrosis were granulosa cell tumour, krukenberg tumour, metastatic deposit in adnexal region from carcinoma endometrium, carcinoma cervix with large exophytic component and mucinous cystadenocarcinoma.

Out of total 54 benign adnexal lesions, 20 lesions (37.1%) had hemorrhage. The benign lesions with hemorrhagic contents were hemorrhagic cyst, endometriomas, hematosalpinx and few leiomyomas. Out of total 8 malignant lesions, 2 lesions (25%) had hemorrhagic contents and these were granulosa cell tumour and mucinous cystadenocarcinoma.

Out of 54 benign lesions, 4 lesions (7.4%) had fat and were all dermoid cysts. No malignant lesion was seen which had fat content. Out total 54 benign lesions, 2 lesions (3.7%) had calcification and 1 of them was calcified subserosal leiomyoma and another 1 was dermoid cyst.

Out of total 39 benign cystic lesions, 2 adnexal lesions (serous cystadenoma) (5.1%) had heterogeneous thick wall and septae with mural nodules. No papillary projections/mural nodules were seen in any other benign cystic adnexal lesions. There was 1 malignant cystic adnexal lesion (serous cystadenocarcinoma) which had heterogeneous thick wall and septae with mural nodules (Table 4).

Out of total 50 patients, contrast was given to only 12 patients with 15 adnexal lesions. Thin, smooth and peripheral enhancement was seen only in benign lesions. Thick, nodular and peripheral enhancement was seen in one patient who had granulosa cell tumour with partial torsion. Out of total 4 adnexal lesions showing solid enhancement, 2 were malignant (50%) and 2 were benign (50%) in nature. Solid enhancements were seen in 2 krukenberg tumour (malignant) and 2 leiomyomas (benign).

All benign lesions had maintained fat planes with adjacent structures. Out 8 malignant lesions, 3 adnexal lesions (serous cystadenocarcinoma, mucinous cystadenocarcinoma and small cell carcinoma of ovary) had indistinct fat planes with adjacent organs (Table 5). Out of total 7 patients with 8 malignant lesions, peritoneal nodules were seen in only 1 patient with mucinous cystadenocarcinoma (Table 6). Only 1 patient with carcinoma endometrium with metastatic deposit in adnexal regions had para-aortic and B/L iliac lymphadenopathy. Lymphadenopathy was not seen in any patients with ovarian malignancy. Out of total 50 patients with adnexal lesions, 1 patient with B/L krukenberg tumour had bony metastasis. The primary was lung cancer detected on CECT chest.

Out of total 7 patients with malignant adnexal lesions, 4 patients (57.1%) had ascites and 1 patient (14.2%) had pleural effusion. Cardiac effusion was not seen in any patient. Ascites, pleural effusion and cardiac effusion were not seen in any patient having benign adnexal lesions.

Comparative analysis of USG and MRI findings with Operative / histopathological findings in operated patients

Out of 31 lesions, MRI had determined 30 lesions correctly for tissue of origin (96.7%) and USG 29 lesions (93.5%). Out of 31 adnexal lesions in 26 operated patients, MRI detected types of contents (solid, complex-solid-cystic, cystic) in all lesions correctly (100%) and USG detected types of contents of in 30 lesions correctly (96.7%). There was 1 adnexal lesion that appeared complex solid cystic on USG but on MRI and Operative findings, it was cystic. This may be due to dense fluid in small cystic structure, gas shadow of bowel loops and partially filled bladder.

Out of 17 adnexal cystic lesions, MRI detected all lesions correctly for presence or absence of mural nodules (100%). On USG, 16 lesions were detected correctly out of 17 lesions (94.1%) and 1 cystic lesion was not assessed because of dense fluid in lesion, small size of lesion, bowel gas shadow and partially distended bladder.

Out of 9 adnexal lesions which had hemorrhagic content on histopathological examination, MRI had detected 8 adnexal lesions correctly for presence of hemorrhage. On MRI, one adnexal was not correctly detected for presence of hemorrhage. The thick protenecious material in that lesion was seen as T1W/T2W hyperintense without suppression on Fat suppressed sequences. This lesion was also not correctly detected on USG as it showed dense internal echoes similar to hemorrhage. Another 3 solid / complex solid cystic lesions which had hemorrhagic component were missed on USG.

There were 2 adnexal lesions in 26 operated patients which had calcification. One lesion was subserosal leiomyoma with thick rim of calcification which was detected on both USG and MRI. Another lesion which had calcification was dermoid cyst which was present as small thin strip and missed on USG because of bowel gas shadow. There were 2 adnexal lesions in 26 operated patients which had fat and correctly detected on MRI. Fat was seen as T1W/T2W hyperintense area that was suppressed on Fat suppressed sequences. Fat was detected on USG in 1 patient as echogenic area. In 1 patient fat was missed on USG because gas shadow and little fat in lesion.

Table 7: Comparative analysis of number of lesions detected in total 50 patients on MRI and USG

Modality	On USG	On MRI
Number of lesions detected	60	62

MRI had detected total 62 adnexal lesions and USG detected total 60 lesions. 2 lesions were not detected on USG. One of them was hematosalpinx which was seen in patient with ovarian dermoid cyst and not detected on USG because of posterior acoustic shadow of dermoid cyst, gas shadow of bowel loops and partially distended bladder. Another lesion that was not detected on USG was small endometrioma which was seen in association with infective tubo-ovarian mass because of bowel gas shadow.

Table 8: Comparative analysis of MRI and USG in diagnosing benign and malignant adnexal lesions in 26 operated patient with 31 lesions (n=31 lesions).

	MRI	USG	Histopathological diagnosis
Benign	24	23	26
Malignant	7	8	5

Table 9: Sensitivity, specificity and accuracy of MRI in diagnosing malignant adnexal lesions in 26 operated patients with 31 adnexal lesions (n=31 lesions).

	Histopathologically positive for malignancy	Histopathologically negative for malignancy	Total
MRI positive for malignancy	5(TP)	2(FP)	7
MRI negative for malignancy	0(FN)	24(TN)	24
Total	5	26	31

Sensitivity = (TP/TP+FP) x100 =100%

Specificity = (TN/TN+FP) x100= 92.3%

Accuracy = (TP+TN/TP+TN+FP+FN) x100=93.5%

Table 10: Sensitivity, specificity and accuracy of USG in diagnosing malignant adnexal lesions in 26 operated patients with 31 adnexal lesions (n=31 lesions)

	Histopathologically positive for malignancy	Histopathologically negative for malignancy	Total
MRI positive for malignancy	5(TP)	3(FP)	8
MRI negative for malignancy	0(FN)	23(TN)	23
Total	5	26	31

Sensitivity = (TP/TP+FP) x100 =100%

Specificity = (TN/TN+FP) x100= 88.4%

Accuracy = (TP+TN/TP+TN+FP+FN) x100=90.3%

Two lesions diagnosed as malignant on MRI but proved benign on histopathological examination (2 cystadenoma in same patient). USG diagnosed 5 malignant lesions correctly. Three lesions diagnosed as malignant on USG but proved benign on histopathological examination (2 cystadenoma in same patient and 1 infective tubo-ovarian mass) (Table 8). In the present study, the sensitivity, specificity and accuracy of MRI in diagnosing malignancy in 26 operated patients with 31 adnexal lesions were 100%, 92.3% and 93.5% respectively (Table 9). In the present study, the sensitivity, specificity and accuracy of USG in diagnosing malignancy in 26 operated patients with 31 adnexal lesions were 100%, 88.4% and 90.3% respectively (Table 10).

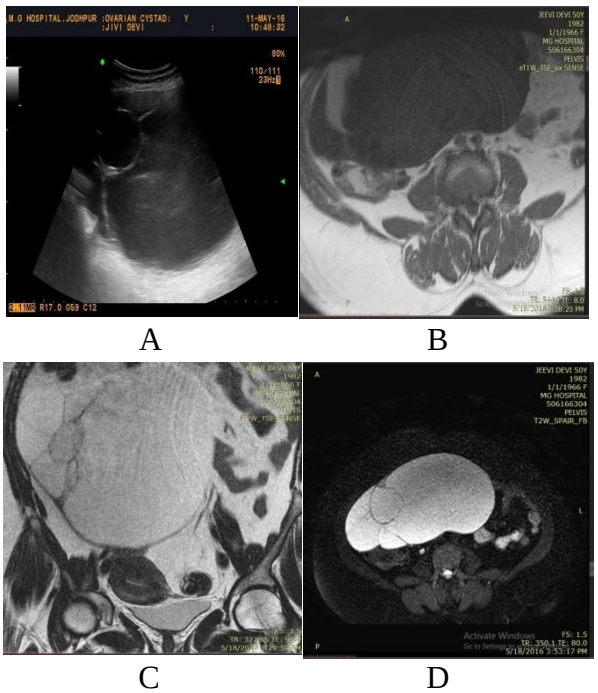
Description of various adnexal lesions seen in this study

On MRI of 50 patients with adnexal lesions, 62 lesions were detected. The adnexal lesions were cystadenoma / cystadenofibroma (19.3%), endometriomas (16.1%) and subserosal / broad ligament leiomyomas / intramural leiomyomas with large exophytic component (16.1%), hemorrhagic cysts (8%), dermoid cysts (6.4%) infective tubo-ovarian masses (6.4%), simple cyst (4.8%), krukenberg tumour (3.2%), cystadenocarcinoma (3.2%), granulosa cell tumour (1.6%), carcinoma cervix with large exophytic component (1.6%) and metastatic deposit from carcinoma endometrium in adnexal region (1.6%).

The adnexal lesions encountered in present study were as following:-

Cystadenoma/cystadenofibroma

There were 11 patient of cystadenoma/ cystadenofibroma with 12 lesions. One of them had bilateral. On USG and MRI, 10 were well defined, cystic lesions with thin and smooth wall and with or without septae and 2 were cystic lesions with thick and irregular wall with septae. Eight patients with 9 adnexal lesions were operated and 7 lesions were correctly identified as benign on both USG and MRI (4 were serous cystadenoma, 2 cystadenofibroma and 1 was mucinous cystadenoma). One patient with bilateral adnexal lesions had thick and irregular wall and septae was suspected of borderline cystic tumour /cystadenocarcinoma of ovary on both USG and MRI but histopathologically confirmed as serous cystadenoma.



A B C D

Figure 1:- Sagittal USG image (A) showing well defined thin wall anechoic cystic lesion with multiple thin and smooth septae. Axial T1W (B), Coronal T2W (C) and axial Fat suppressed (D) MR images showing approximately 10x20x18 cm sized purely cystic lesion appearing hyperintense on T2W images while hypointense on T1W images.

There was no solid component or any feature suspicious of malignancy. The lesion was removed surgically and found out to be Serous Cystadenoma on histopathological examination.

Endometriomas

There were total 10 endometriomas. On USG, these were seen as well defined smooth and thin/thick wall cystic lesions with low level internal echoes. On MRI, these were appearing as iso- to hyperintense on T2W/SPAIR images while hyperintense on T1W images. Post contrast there was thin smooth peripheral enhancement. Out of them, 3 had bilateral lesions. Two were operated and histopathologically identified as endometriomas. One endometrioma was not detected on USG because small in size, present in same adnexal region which had infective tubo-ovarian mass and gas shadow of bowel loops. The sensitivity MRI was 100% in detecting endometriomas

Leiomyomas

There were 10 patient of leiomyomas that were either subserosal / broad ligament leiomyomas / intramural with large exophytic component. On USG they were seen as large well defined hypoechoic mass lesions in adnexal region / intrapelvic and lower abdomen. On MRI they were seen as T1W/T2W hypointense well defined lesions. 5 of them were operated and histopathologically identified as leiomyoma.

Hemorrhagic cysts

There was 5 patient of hemorrhage cyst. On USG, 4 of them were seen as well defined cystic lesion with fine internal echoes. One of them was seen as well defined cystic lesion with organized dense echoes. On MRI all were seen as T1W/T2W hyperintense signals that were not suppressed on fat sequences. On follow up USG, 4 lesions were resolved and one patient was lost to follow up.

Dermoid cysts

In our study, there were 4 patient of dermoid cyst. On USG, these were seen as complex solid cystic mass with posterior acoustic shadowing. On MRI, theses were complex solid cystic masses with areas of T1W/T2W hyperintense signals with corresponding loss signals on fat suppressed sequences. Two were operated and identified as dermoid cyst on histopathological examinations. Two patients were lost from followed up.

Infective Tubo-ovarian masses and pyo/hydrosalpinx

There were 4 patients of infective tubo-ovarian masses, 1 of them had bilateral. On USG 3 were seen as cystic and tubular fluid filled structures in adnexal region. 1 of them was seen as mixed hypoechoic mass in adnexal region. On MRI, all were seen as cystic and tubular structures in adnexal region with T2W hyperintense fluid signals and T1W hypointense signals. One of them was operated and histopathologically indentified as infective tubo-ovarian mass.

Hematosalpinx

There was 1 patient of hematosalpinx. On USG, the lesion was not detected because posterior acoustic shadow of dermoid cyst, gas shadow of bowel loops and small size of lesion. On MRI, it was seen as a T1W/T2W hyperintense cystic elongated structure which was not suppressed on fat suppressed sequences.

Ectopic pregnancy

There was one patient of Ectopic pregnancy in left adnexal region. She was recanalised 5 month back and at that time USG was normal. On USG, there was a hypoechoic lesion in left adnexal region which was medial to left ovary. On MRI there was a T1W/T2W hyperintense lesion medial to left ovary that was not suppressed on fat suppressed sequences. She was given methotrexate injection and on followed USG, the lesion size was reduced in size and beta HCG titre was decreased on follow up investigations. MRI was more sensitive (100%) in detecting ectopic pregnancy when findings were correlated with clinical features, past history and lab investigations because MRI was able to diagnose hemorrhage. On USG, subserosal/broad ligament leiomyomas may also show similar hypoechoic appearance.

Uterine Hematoma with large exophytic component

There was one case of intramural hematoma with large exophytic component in antero-left lateral

wall of uterus. She had history of D&C three month before. On USG there was a large hypoechoic mass lesion with large exophytic component in antero-left lateral wall of uterus. On MRI, the lesion was showing T1W/T2W hyperintense signals that were not suppressed on fat suppressed sequences.

Simple cysts

There were 3 simple cysts in adnexal region. These were seen as anechoic thin wall cystic lesions with posterior acoustic enhancement. On MRI, these were seen as well defined thin wall cystic lesions with T2W hyperintense fluid signals and T1W hypointense signals.

Cystadenocarcinoma

There were 2 patients of Cystadenocarcinoma. On USG, these were large cystic mass with thick and irregular wall and multiple thick and irregular septae. Multiple mural nodules were also seen. On MRI, these were cystic masses with thick and irregular wall and thick and multiple irregular septae. Both of them were operated and one was serous cystadenocarcinoma and other was mucinous cystadenocarcinoma.

Granulosa Cell Tumour

There was 1 case of Granulosa Cell Tumour. On USG it was seen as hyperechoic mass with hypoechoic necrotic areas in right adnexal region. On MRI it was T1W hypointense complex solid cystic mass with T1W hyperintense hemorrhagic areas and mixed T2W hyperintense signals. Post contrast there was minimal peripheral nodular enhancement that may be due to torsion. Mild ascites was also seen.

Krukenberg Tumour

There was 1 case of histopathologically proven Krukenberg Tumour in bilateral ovary associated bilateral plural effusion and ascites. On USG, there was complex solid cystic mass showing vascularity on color mode. The left ovary was enlarged. On MRI, the right adnexal lesion was hypointense T1W images and mixed hyperintense on T2W images. The left ovary was enlarged. There is moderate post contrast enhancement of solid component of right adnexal region and left ovary. Later on patient had undergone CT chest and there was a lung mass in right lung parenchyma.

Carcinoma cervix with exophytic component

There was in case of carcinoma cervix with large exophytic component. The lesion appeared hypoechoic mass on USG and T1W/T2W solid soft tissue mass in cervical region with exophytic component.

Metastatic deposit in adnexal region from carcinoma endometrium

There was 1 case of metastatic deposit in adnexal region from carcinoma endometrium. The uterus was grossly enlarged and abnormal with replacement of normal parenchyma with soft tissue intensity mass which is not separate from endometrium. On USG, the uterus was grossly enlarged and abnormal with heterogeneous echotexture.

Conclusion

The sensitivity of MRI and USG for diagnosing malignancy of adnexal lesions is similar (100%). However, due to better specificity and lower false positivity rate, higher sensitivity in detecting invasion of adjacent organs and organs of origin of lesions, MRI may be considered as complimentary for optimal patient management.

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