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MANAGEMENT AND EARLY DIAGNOSIS OF ECTOPIC PREGNANCY

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ABSTRACT

Ectopic pregnancy (EP) remains a leading cause of first-trimester maternal mortality worldwide. This study was conducted at DHQ Hospital Faisalabad to assess diagnostic and management strategies with a focus on ultrasonography. Thirty patients aged 22–37 years diagnosed with EP were evaluated between April and May 2024. Data included demographics, risk factors, gestational age, site of EP, and presenting symptoms. Transvaginal ultrasound combined with β-hCG was the main diagnostic tool. Results revealed that fallopian tube was the most common site, while smoking, previous cesarean section, and prior tubal surgery were notable risk factors. Abdominal pain and vaginal bleeding were the most frequent symptoms. Ultrasonography proved to be highly sensitive and non-invasive, making it the gold standard for EP diagnosis. Early detection is vital to minimize morbidity, mortality, and preserve fertility. Ectopic pregnancy, affecting about 2% of pregnancies, is a serious condition where the fertilized egg implants outside the uterus, most often in the fallopian tube. It poses significant risks to maternal health and can be fatal if untreated. Diagnosis relies mainly on transvaginal ultrasound and serial β-hCG testing.

1. Introduction

Ectopic pregnancy (EP) considerably contributes to maternal morbidity, give rise to sensitive indication such as pelvic tenderness and vaginal hemorrhage. Greater utilization of aided reproductive technology (ART), and continuously use may cause issues like infertility. The short- and long-term impacts on health related aspects of existence and trauma are likely considerable but have not been conventionally measured [1]. Extra-uterine pregnancy is fewer common than intrauterine pregnancy. When the egg is fertilized and develops outside the uterine cavity (only in Fallopian tubes), this state is called ectopic pregnancy. This condition causes death in premature pregnancy. The analysis of ectopic pregnancy is usually made in the first trimester of pregnancy [2]. The most frequent age at pregnancy diagnosis is 6 to 10 weeks, even though fetal viability can be diagnosed at birth. Ectopic pregnancy occurs with nearly just about the same incidence in women of diverse ages and races [3].

Pain and vaginal bleeding are frequent, with one-third of females experiencing these symptoms in early pregnancy. Tenderness is often persistent, severe, and typically unilateral, even though this is not exclusively symptomatic of ectopic pregnancy. Shoulderpain, shock, and syncope occur, up to 20% of cases, signifying more severe presentations such as rupture. Abdominal pain is present in more than 75% of cases, and cervical movement tenderness is reportable in up to 67% [4]. A conspicuous adnexal lump is found in close to 50% of cases. However, one third of females might have no clinical symptoms, and roughly 9% may exhibit no symptoms at all. Given these ratios, clinicians must keep up a high index of suspicion for ectopic Ectopic pregnancy (EP) is a life-threatening condition in which a fertilized ovum implants outside the uterine cavity. It accounts for 1–2% of pregnancies in developed nations, but the burden is much higher in low-resource settings. In the pregnancy in women of reproductive age presenting with abdominal or pelvic symptoms, even in the lack of typical signs [5].Early diagnosis of ectopic pregnancy is important in preventing critical problems such as uterine rupture or tear and bleeding. In cases of supposed rupture with syncope and distress, immediate surgical intervention is essential. Diagnostic methods comprise trans-vaginal ultrasound, serial beta-human. Chronic gonadotrophin (beta-h Cg) extent, and in some cases, magnetic resonance imaging (MRI) or diagnostic laparoscopy. Using these tools collectively, doctors can identify ectopic pregnancy and develop an appropriate management strategy. Ultrasound is noninvasive, extremely sensiti ve and is able to determine flow which makes it an important tool in evaluating early pregnancy [6]. Early diagnosis through ultrasound permits for appropriate intervention ultimately civilizing patient outcomes and dropping the risk of lif e threatening complications related with ectopic pregnancy. All early pregnancies should experience Ultrasonography for feasibility and site of pregnancy. . Ultrasound (USG) is the first diagnostic examination used to identify location and condition of ectopic pregnancy. Trans-vaginal ultrasound is the number one (TVUS) method due to its high resolution and its close contact to the abdomen. During early ectopic pregnancy, ultrasound may demonstrate the absence of nonexistence of a gestational sac in the ut erus and typically an adnexal mass in the fallopian tube. Other ultrasound signs, such as yolk sac or gestational sac with a fetal pole outer surface of the uterus, also specify an ectopic pregnancy [7].

United Kingdom, EP is the leading cause of first-trimester maternal deaths [8] while in developing countries; mortality may reach 10% [9] Risk factors include pelvic inflammatory disease, previous tubal surgery, infertility treatments, smoking, and advanced maternal age. Women with a prior ectopic pregnancy are at significantly higher risk of recurrence [10]. Diagnosis is primarily based on transvaginal ultrasonography (TVUS) and serial β-hCG This cross-sectional study was conducted in the Department of Radiology, DHQ Hospital Faisalabad, from April 1 to May 31, 2024, over duration of three months following synopsis approval. A total of 30 women aged 22–37 years, diagnosed with ectopic pregnancy at ≤9 weeks gestation and confirmed by ultrasound, were enrolled through convenient sampling, while patients with incomplete medical records or heterotrophic pregnancy were excluded. Transvaginal Doppler ultrasound was the primary diagnostic tool, with scanning focused on assessing the uterus,, adnexal regions, fallopian tubes and blood flow to suspected ectopic masses.

2.1 Diagnostic Methods:

2.1.1 Clinical Presentation:

Data on symptoms such as colicky abdominal or pelvic pain, vaginal hemorrhage, syncope, vomiting, diarrhea, shoulder pain, lower urinary tract abnormalities, rectal pressure, or pain with defecation will be collected.

2.1.2 Physical Examination:

-In order to any hemodynamic volatility, cervical motion or adnexal soreness, and palpation of an adnexal mass will be examined.

2.1.3 β-hCG Measurement:

β-hCG levels calculated every 48 hours will be acknowledged. Data on the rate of increase or reduce in β-hCG levels will be analyzed to help in the diagnosis.

2.1.4 Trans-vaginal Ultrasonography:

levels, with sensitivities of 87–99% [11]. Treatment includes methotrexate, surgical intervention, or expectant management depending on stability [12]. This study evaluates the clinical profile, diagnostic approach, and management of ectopic pregnancy using ultrasound in a Pakistani population.

2. Material and Methods

Data on the existence or absence of an intrauterine pregnancy, adnexal masses, or symptoms of ectopic pregnancy will be collected.

2.2 Management Methods

2.2.1 Medical Management:

Methotrexate protocols (single-dose, two-dose, or multi-dose) based on initial β-hCG levels will be revived. Contraindications and transcribe β-hCG monitoring data will be collected.

2.2.2 Surgical Management:

Data on indications for surgical treatment (e.g., hemodynamic volatility, peritoneal signs, high β-hCG levels, fetal cardiac movement) and types of surgical actions (salpingostomy) will be gathered.

2.2.3 Expectant Management:

Cases managed keenly will be acknowledged, including criteria for collection and monitoring outcomes.

2.3 DATA COLLECTION PROCEDURE:

2.3.1 Medical Records Review:

Data will be collected from electronic wellbeingrecords, including patient demographics, medical history, clinical presentation, analytical procedures, treatment interventions, and follow-up outcomes. Specific information will be collected on basis of diagnostic methods (e.g., transabdominal and trans-vaginal ultrasound findings, serum beta-hCG levels). All patients were tell about the nature and purpose of the study and written in form consent where taken and institutional moral

values committee approval was being taken in advance. Everyone who participated in the study was given thorough information about its reason and designs are written in format consent where taken after approval from the institutional and hospital ethical committee. Clinical test was demographic data history complaints were taken from participants and recorded on the data anthology sheets or clinical Performa. Ultrasound imaging reports were collected after written consent and imaging finding where documentation on data collection sheets. After statistical data collection it was analyzed using statistical software SPSS version 26.0.

2.4 Ethical Considerations:

The rules and conventions set by the ethical committee of the GC University Faisalabad were followed while conducting the study and the rights of the research participants were respected. Written informed consent attached was taken from all the participants. All information and data collection were kept private. Participants were remained unknown throughout the study. The subjects were educated that there are no disadvantages or hazard on the procedure of the study. They were also be well-versed that they will be liberated to withdraw at any time during the process of this study.

3. RESULTS

We have included total 30 females on the basis of their history in ectopic pregnancy through convenient data collecting techniques in this cross sectional study. According to inclusion criteria the age range of females is about 22 years to 37 years. Total 30 patients were included and evaluated on ultrasonography with suspected condition of ectopic pregnancy in which 60% of females were 30 and more than 30 years old and 40% of females were more than 20 years old. Their gestational week percentage is about 33% of females had 8 weeks of gestational age, 20% of females had 6 weeks gestational age, 13% of females have 7 weeks of gestational age, 10 % of females have 5 and 9 weeks of gestational age and lastly 6% of females have 4 and 10 weeks of gestational age. In our study mean and standard deviation were also calculated.

Graph 3.1. Graphical Representation of Age

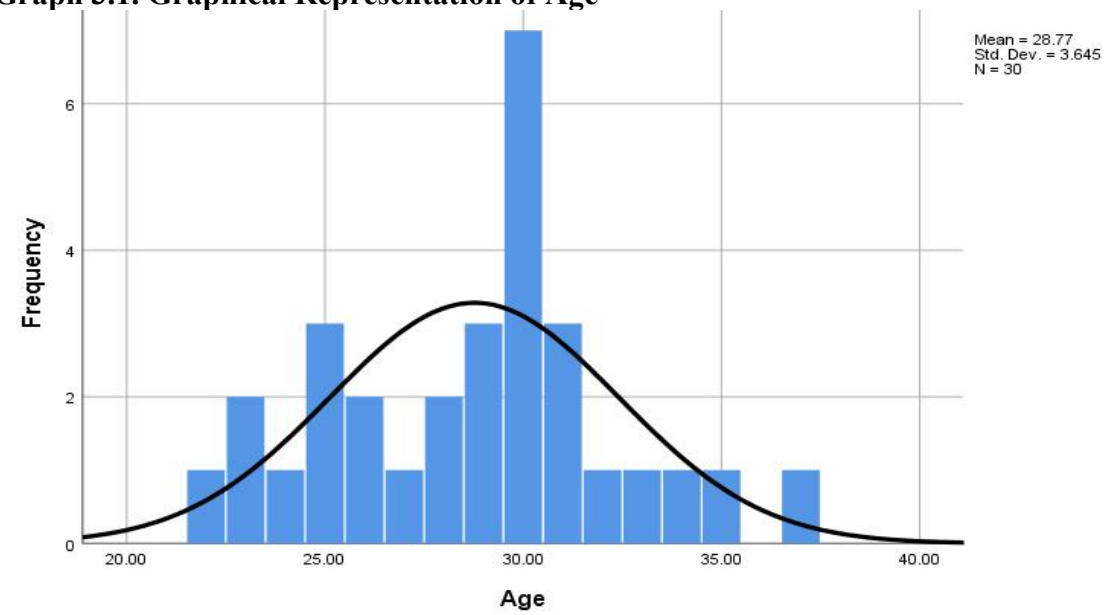


Table 3.1 Tubular Representation of Gestational week					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10 weeks	2	6.7	6.7	6.7
	4 weeks	2	6.7	6.7	13.3
	5 weeks	3	10.0	10.0	23.3
	6 weeks	6	20.0	20.0	43.3
	7 weeks	4	13.3	13.3	56.7
	8 weeks	10	33.3	33.3	90.0
	9 weeks	3	10.0	10.0	100.0
	Total	30	100.0	100.0	

Graph 3.2. Graphical Representation of Gestational week

3.1. Site of Ectopic Pregnancy

This table 5.3 shows that patients are categorized according to their different site of ectopic pregnancy. In 23% of females the ectopic site of pregnancy is follapian tube which shows that it is the most common site for ectopic pregnancy. And after follapian tube cervix is the second most common site for ectopic pregnancy.

Table 3.2. Different Site of ectopic pregnancy					
Site of ectopic pregnancy		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	ABDOMINAL CAVITY	3	10.0	10.0	10.0

	AMPULLA OF FOLLEPIAN TUBE	1	3.3	3.3	13.3
	CERVIX	7	23.3	23.3	36.7
	FOLLAPIAN TUBE	3	10.0	10.0	46.7
	FOLLEPIAN TUBE	9	30.0	30.0	76.7
	OVARY	6	20.0	20.0	96.7
	UTERUS	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

3.2 OVARIAN SITES FOR ECTOPIC PRGNANCY

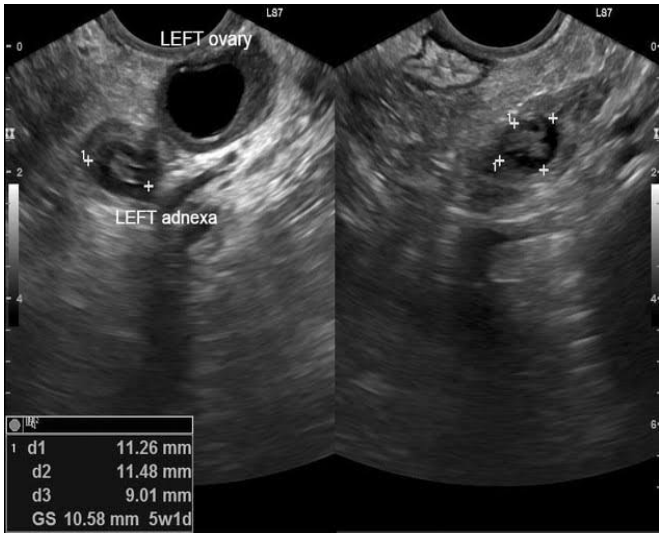


Fig 3.1. Left ovary.

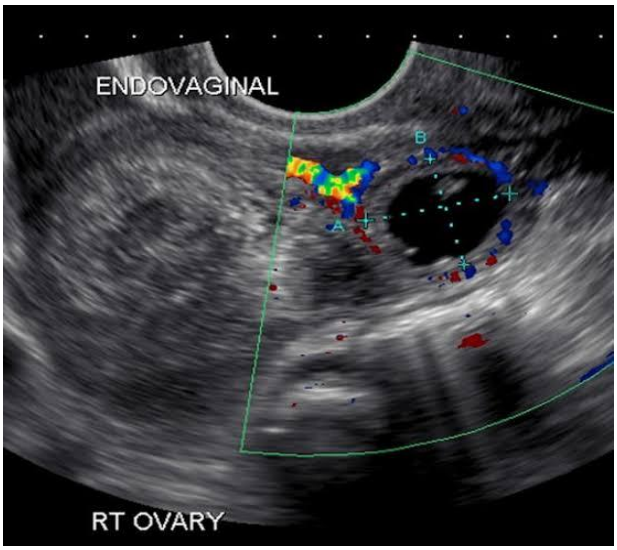


Fig 3.2. Right ovary

3.3 Previous ectopic pregnancy History:

This table 5.4 shows that ectopic pregnancy is the rarest case in females. Approximately 2% of all pregnancy are ectopic in nature. Mostly ectopic pregnancies are seen in females who had already have one or no history of ectopic pregnancy, but females with 2 or 3 ectopic pregnancies are most rarely denoted.

Table 3.3 History of Previous Ectopic Pregnancies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	13	43.3	43.3	43.3
	1.00	12	40.0	40.0	83.3
	2.00	3	10.0	10.0	93.3
	3.00	1	3.3	3.3	96.7

	One ectopic pregnancy	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

3.4 Condition of Ectopic Pregnancy

This table 5.5 shows one of the most common condition which is wall ruptured of about 36.7% in ectopic pregnancy and second is the unruptured tube which is almost 33.3%. Some of the least noted conditions with only 3.3% in this research study are ruptured tube, fallopian tube dysfunction and pelvic inflammation.

Table 3.4 Different Conditions Occur During Ectopic Pregnancy

Conditions During Ectopic Pregnancy		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cornual(interstitutal)	1	3.3	3.3	3.3
	FOLLAPIANTUBE DYSFUNCTION	1	3.3	3.3	6.7
	OVULATORY DYSFUNCTION	2	6.7	6.7	13.3
	PELVIC INFLAMMATION THROUGH DISEASE	1	3.3	3.3	16.7
	TUBAL NONVIABLE EMBRYO	1	3.3	3.3	20.0
	TUBAL INJURY	2	6.7	6.7	26.7
	TUBE RUPTURED	1	3.3	3.3	30.0
	UNRUPTURED	10	33.3	33.3	63.3
	WALL RUPTURED	11	36.7	36.7	100.0
	Total	30	100.0	100.0	

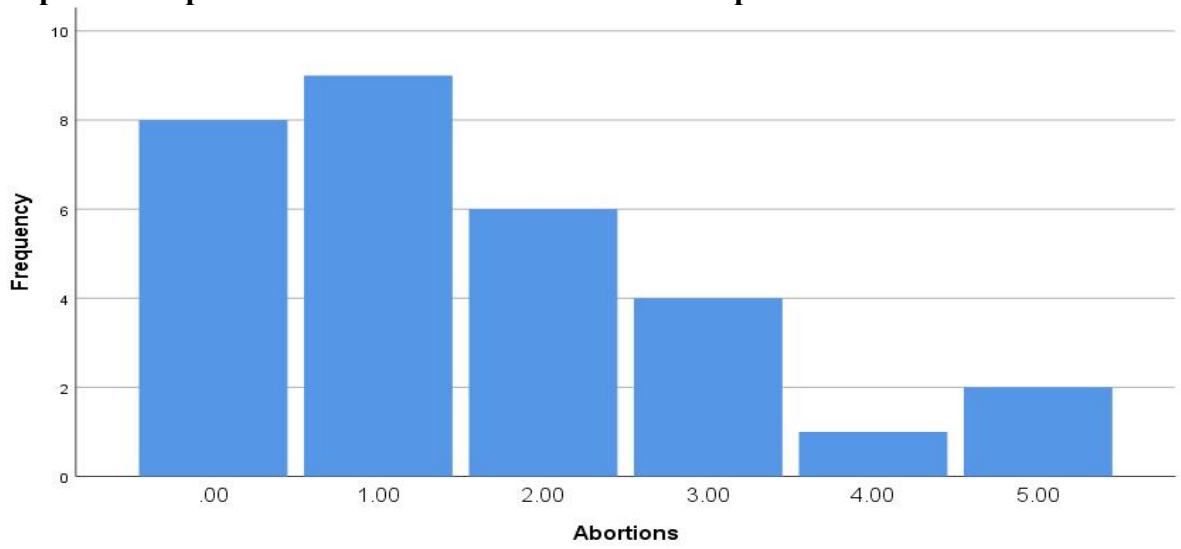
3.5 Abortions:

This table and study shows that there is no exact evidence that having one or more abortions increase the risk of ectopic pregnancy in females.

Table 3.5 Rate of Abortions Related to Ectopic Pregnancy

Abortions		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	8	26.7	26.7	26.7
	1.00	9	30.0	30.0	56.7
	2.00	6	20.0	20.0	76.7
	3.00	4	13.3	13.3	90.0
	4.00	1	3.3	3.3	93.3

Graph 3.3 Graphical Presentation of Abortions in Ectopic Females



3.6 Symptoms:

This table shows that abdominal pain, shoulder pain and vaginal bleeding which might be high or low are the most frequent and common symptoms of ectopic pregnancy in females.

Table 3.6 Shows Different Symptoms of Ectopic Pregnancy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Abdominal pain fainting	1	3.3	3.3	3.3
	Abdominal pain,vaginal bleeding	1	3.3	3.3	6.7
	abdominal pain nausea	2	6.7	6.7	13.3
	Abdominal pain,cramps heavy bleeding	1	3.3	3.3	16.7
	Abdominal pain,light bleeding	1	3.3	3.3	20.0
	Abdominal pain,nausea,vomiting	2	6.7	6.7	26.7
	Dizziness,fainting	1	3.3	3.3	30.0
	Heavy bleeding, vomiting,abdominal pain	1	3.3	3.3	33.3
	Heavy bleeding,fainting,	1	3.3	3.3	36.7
	Heavy bleeding,vaginal discharge,vomiting	1	3.3	3.3	40.0
	Heavy bleeding,vaginal discharge, vomiting ,nausea	1	3.3	3.3	43.3
	Heavy bleeding	1	3.3	3.3	46.7
	Light spotting, cramps	1	3.3	3.3	50.0
	Light spotting,pelvic pain	1	3.3	3.3	53.3

	Light spouting, pain,bleeding cramps	1	3.3	3.3	56.7
	Light spouting,cramps,bleeding	1	3.3	3.3	60.0
	Mild pain,bleeding	1	3.3	3.3	63.3
	Abdominal pain,spouting	1	3.3	3.3	66.7
	Severe abdominal pain,cramps	2	6.7	6.7	73.3
	Severe abdominal pain,vaginal bleeding	1	3.3	3.3	76.7
	Severe bleeding, nausea	1	3.3	3.3	80.0
	Severe pain fainting	1	3.3	3.3	83.3
	Severe pain,dizziness	1	3.3	3.3	86.7
	Sever e pain,fainting	1	3.3	3.3	90.0
	Shoulder pain,bleeding	1	3.3	3.3	93.3
	Shoulder pain,fainting	1	3.3	3.3	96.7
	Tubal inflammation, ruptured heavy bleeding,vomiting	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

3.7 Case Processing Summary.

Table 3.7 Gestational week and Previous ectopic pregnancy History Cross-tabulation

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gestational week * Previous ectopic pregnancy History	30	100.0%	0	0.0%	30	100.0%
Gestational week * Prior Tubal Surgery	30	100.0%	0	0.0%	30	100.0%
Gestational week * Previous ceseran	30	100.0%	0	0.0%	30	100.0%

Gestational week * Abortions	30	100.0%	0	0.0%	30	100.0%
Gestational week * Previous pregnancy	30	100.0%	0	0.0%	30	100.0%

4. Discussion

The findings of this research reveals the critical diagnosis and complex management of ectopic pregnancy Consequently ectopic pregnancy is the main reason of maternal morbidity and mortality in the early stages of pregnancy. So the main reason of this research article to highlight the early diagnosis and administration of tubal pregnancy. After this study we realize improving diagnostic methods have no effects on its stability and underlying risk factors remain frequent. In our study , the study samples are taken from gynecology department evaluated and diagnosed on ultrasound which is the most effective diagnostic way of choice in pregnancy as compared to other imaging modalities because it uses sound waves that are safe. The results of this abnormal pregnancy reveal that most of the females who suffer from ectopic condition are women above 30 years old with the mean age of 28 years. These results are compatible with the previous studies done on ectopic pregnancy. Clinical presentation may be varied in previous studies however their symptoms are same like pelvic pain, abdominal pain, shoulder pain, nausea, spotting, heavy or light vaginal bleeding. One of the most significant risk factor is smoking and advancement in maternal age according to previous studies. Ectopic pregnancy is also reported in 50% of females who smoke frequently. Most of females in our study presented with ectopic pregnancy in fallopian tube which is about 40% according to our study and 36% of the fallopian tubes are ruptured in this condition and 33% of females are reported with not tubal ruptured. History of previous abortions is also covered in this study which clearly states that abortions have not any effect on any future ectopic pregnancy. 53% of females with previous cesarian are reported with ectopic pregnancy as compared to the females who have no cesarian in history. because it is a subsequent risk factor for ectopic pregnancy. Tubal surgery increases the risk of ectopic pregnancy. Post-surgical infection and inflammation can also increase these risks. Specific surgeries for ectopic pregnancy like salpingostomy, salpingectomy, and tubal reanastomosis carry some risks. Early and perfect diagnosis of ectopic pregnancy is fundamental for reducing related mortality and morbidity rate. Management strategies of ectopic pregnancy are tubal surgery, beta HCG test, methotrexate and early detection from ultrasound imaging study. So these are related to management strategies of ectopic pregnancy which comprise expectant, surgical and medical approaches.

5. Conclusion

This study highlights the importance of early detection and effective management of ectopic pregnancy, a condition where the fertilized egg implants outside the uterus. We have ultrasonological evaluation of 30 females having ectopic pregnancy. The mean age at ectopic pregnancy was 28.77 years (SD 3.645). The highest rate of ectopic pregnancy occurs in women aged 35-44

years. A 3- to 4-fold increase in the risk of developing an ectopic pregnancy exists compared with women aged 15-24 years. Despite advancements in diagnosis, ectopic pregnancies remain a threat to maternal health, specifically in early pregnancy. Ultrasound is key for diagnosis, with common symptoms including pelvic pain and vaginal bleeding. Risk factors such as Timely intervention are crucial to reduce mortality and morbidity. Overall, the research emphasizes the need for careful monitoring and prompt action to safeguard maternal well-being.

6. RECOMMENDATION:

Ultrasonography is the most accurate diagnostic modality that is recommended for early diagnosis and management of ectopic pregnancy. Researchers can use this study data which is derived from Pakistani population based on the multi-center study. This study provides both theoretically and practical implication in a sense that it adds data to the literature through practical evaluation of cases on Ultrasonography and helps the researchers or investigators to further explore the areas large prospective studies with extended study duration is needed for further research.

References

1. Mullany, K., Minneci, M., Monjazeb, R., & C Coiado, O. (2023). Overview of ectopic pregnancy diagnosis, management, and innovation. *Women's health (London, England)*, *19*, 17455057231160349. https://doi.org/10.1177/17455057231160349
2. Murray, H., Baakdah, H., Bardell, T., & Tulandi, T. (2005). Diagnosis and treatment of ectopic pregnancy. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*, *173*(8), 905–912. https://doi.org/10.1503/cmaj.050222
3. Abdulkareem, T. A., & Eidan, S. M. (2017). Ectopic Pregnancy: Diagnosis, Prevention and Management. InTech. doi: 10.5772/intechopen.71999
4. Patel, S., & Desai, A. (2019). Study of diagnosis and management of ectopic pregnancy. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, *8*(6), 2465–2470. https://doi.org/10.18203/2320-1770.ijrcog20192451
. Solangon, S. A., Van Wely, M., Van Mello, N., Mol, B. W., Ross, J. A., & Jurkovic, D. (2023). Methotrexate vs expectant management for treatment of tubal ectopic pregnancy: An individual participant data meta-analysis. *Acta obstetricia et gynecologica Scandinavica*, *102*(9), 1159–1175. https://doi.org/10.1111/aogs.14617
. Alur-Gupta, S., Cooney, L. G., Senapati, S., Sammel, M. D., & Barnhart, K. T. (2019). Two-dose versus single-dose methotrexate for treatment of ectopic pregnancy: a meta-analysis. *American journal of obstetrics and gynecology*, *221*(2), 95–108.e2. https://doi.org/10.1016/j.ajog.2019.01.002
. Barnhart, K. T., Gosman, G., Ashby, R., & Sammel, M. (2003). The medical management of ectopic pregnancy: a meta-analysis comparing "single dose" and "multidose" regimens. *Obstetrics and gynecology*, *101*(4), 778–784. https://doi.org/10.1016/s0029-7844(02)03158-7
. Lozeau, A. M., & Potter, B. (2005). Diagnosis and management of ectopic pregnancy. *American family physician*, *72*(9), 1707–1714.
. Lawani OL, Anozie OB, and Ezeonu PO. (2013). *Ectopic pregnancy: a life-threatening gynecological emergency*. International Journal of Women's Health, 5:515–521.
0. Kirk E, Bourne T. "Diagnosis of ectopic pregnancy with ultrasound." *Best Practice & Research in Clinical Obstetrics & Gynaecology*. August 2009; 23(4): 501–508. DOI: 10.1016/j.bpobgyn.2008.12.010

11. Kirk, E., Bottomley, C., & Bourne, T. (2014). *Human reproduction update*, *20*(2), 250–261. https://doi.org/10.1093/humupd/dmt047.
12. Sivalingam, V. N., Duncan, W. C., Kirk, E., Shephard, L. A., & Horne, A. W. (2011). Diagnosis and management of ectopic pregnancy. *Journal of Family Planning and Reproductive Health Care, 37*(4), 231–240. https://doi.org/10.1136/jfprhc-2011-0073