ORIGINAL RESEARCH ARTICLE

Rising Trends in Ectopic Pregnancy during COVID-19 Pandemic

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Abstract

Introduction: Coronavirus disease-2019 (COVID-19) has spread at an exponential rate in several countries. Whereas understanding of clinical consequences, prevention, and management of COVID-19 is increasing, little is known about the collateral damage caused by it. It is noteworthy that ectopic pregnancies contributed to significant obstetric emergencies in the COVID-19 pandemic and sensitized the caregivers to report the event.

Materials and methods: This retrospective study was conducted at the Tertiary Care Medical and Teaching Institute, Amritsar, India, to observe the rising trends of ectopic pregnancy during the lockdown period from March 22, 2020, to July 30, 2020. Data were taken from the hospital records of Emergency and Gynaecology and Obstetric departments after getting ethical clearance from the ethics committee of the institute. The details of demographic characters, clinical presentation, risk factors, and treatment plan for ectopic pregnancy, as well as associated morbidity and mortality were studied in detail in comparison to times other than during COVID-19 pandemic.

Results: It was observed that the proportion of ruptured ectopic pregnancies was significantly higher during the lockdown period in comparison to the prelockdown period (12/617; 1.94% vs. 17/4367; 0.381%, Fisher's exact test *p* 0.02). Majority of patients (91.66%) presented late with ruptured ectopic pregnancy with hemoperitoneum and had to undergo emergency laparotomy and a salpingectomy was done in 66.66% of cases.

Discussion: Social lifestyle changes, increased use of emergency contraceptive pills, and medical abortion pills due to poor accessibility of healthcare facilities were observed during this period. Noticeably, a high number of patients came in an emergency with failed medical abortions who were later diagnosed with ruptured ectopic pregnancies.

Conclusion: We think that monitoring the indirect potential consequences of COVID-19 pandemic is imperative in order to avoid unexpected deleterious complications in women's health.

Keywords: COVID-19, Hemoperitoneum, Laparotomy, Medical abortion, Ruptured ectopic pregnancy.

AMEI's Current Trends in Diagnosis & Treatment (2020): 10.5005/jp-journals-10055-0106

Introduction

Coronavirus disease-2019 (COVID-19) has spread globally at an exponential rate. Several preventive measures were implemented to reduce its transmissibility. It included restrictions on elective surgical intervention and outpatient visits. The understanding of clinical consequences, prevention, and management of COVID-19 is increasing,[1–4] but there are certain collateral damages, which are caused by the action taken to limit the spread of the pandemic. The restrictive measures and disruption in healthcare services due to pandemic had deleterious effects on women and children's health.[5]

During the lockdown period, there was a rising trend of spontaneous conceptions, even in subfertile subjects. The social lifestyle changes during lockdown contributed to unwanted pregnancies, even in those couples who were waiting for infertility workup and artificial reproductive techniques (ARTs). The rise in the incidences of ectopic pregnancies during this time is a part of these spontaneous conceptions. A ruptured ectopic pregnancy is the most important cause of maternal mortality and morbidity in the first trimester.[6]

There was an increase in the incidence of use of emergency contraceptive pills and medical abortion pills due to the inaccessibility of healthcare facilities. Noticeably, a high number of patients came in an emergency with failed medical abortion and some of them had actually undiagnosed ectopic pregnancy. Early diagnosis reduces the risk of tubal rupture and allows more conservative medical treatments.[7]

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How to cite this article: Kaur S, Kamal P, Pahwa S, *et al.* Rising Trends in Ectopic Pregnancy during COVID-19 Pandemic. AMEI's Curr Trends Diagn Treat 2020;4(2):84–86.

Source of support: Nil

Conflict of interest: None

Although there was a recent trend to diagnose ectopic pregnancy in early stages with an unruptured fallopian tube, due to patients' reluctance to seek medical advice during the lockdown period or due to the reduction of early first trimester scans, the proportion of ruptured ectopic pregnancies was significantly higher.

Materials and Methods

We conducted a retrospective study at the Tertiary Care Medical and Teaching Institute, Amritsar, India, to observe the rising trends of ectopic pregnancy during the lockdown period from March 22, 2020, to July 30, 2020. The total number of deliveries was recorded during this period and also from January 2018 to March 2020 from the

hospital records of Gynaecology and Obstetrics Departments. The details of demographic characters, clinical presentation, risk factors, and treatment plan for ectopic pregnancy, as well as associated morbidity and mortality were studied in detail in comparison to times other than during the COVID-19 pandemic. Among the patients with ectopic pregnancy, the increase in the proportion of women who underwent emergency surgical intervention for a ruptured tubal pregnancy was also evaluated. Emergency surgical intervention was defined as one performed in less than 6 hours after patients' presentation at the hospital. Methotrexate was given as conservative treatment in patients with unruptured tubal pregnancy.

Results

During the prelockdown period from January 2018 to March 2020, there were 4,367 deliveries in our hospital and during this period, 17 (0.38%) patients with ectopic pregnancy were admitted, whereas during the lockdown period from March 22, 2020, to July 31, 2020, there were 617 deliveries and 12 (1.94%) ectopic pregnancies were reported (Tables 1 to 4).

As shown in Table 1, the majority of patients (50%) belonged to the age-group of 26–30 years, which is the age of peak sexual activity and reproduction.

Table 1: Baseline characteristics of study population

Age (years)	*Number of patients*	*Percentage*
20–25	2	16.66
26–30	6	50
>30	4	33.34

Table 2: Distribution of patients according to gravidity

Gravidity	*Number of patients*	*Percentage*
Primigravida	4	33.33
Second gravida	1	8.33
Third gravida and more	7	58.34

Table 3: Clinical presentation of study population

Clinical presentation	*Number of patients*	*Percentage*	*Mode of treatment*
Mild pain	2	16.67	Medical management
Severe pain	2	16.67	Laparotomy
Ruptured ectopic pregnancy	8	66.66	Laparotomy

Table 4: Risk factors for ectopic pregnancy in study group

Risk factors	*Number of patients*	*Percentage*
History of (H/o) pelvic inflammatory disease (PID)	2	16.66
H/o intrauterine contraception device (IUCD)	1	8.33
H/o previous ectopic pregnancy	1	8.33
H/o medical abortion pill intake	5	41.66
No risk factors	3	25

Table 2 depicts that 58.34% of patients were multigravida and 33.33% were primigravida. Interestingly, multigravida had more percentages of ectopic pregnancies.

As shown in Table 3, we received twelve patients with ectopic pregnancies, of which eight presented with acute abdomen with hemoperitoneum. Unilateral salpingectomy was the prime procedure done for a ruptured ectopic pregnancy. Two patients were admitted with severe pain with impending rupture. Two patients reported mild pain (in an unruptured state). One patient responded to medical treatment with methotrexate (single dose) and the second patient underwent a laparotomy due to failed medical therapy. Salpingostomy was done in three (25%) patients who had not completed their family and were hemodynamically stable.

Table 4 shows that in 41.66% of patients, over-the-counter use of emergency contraceptive pills and medical abortion pills was the contributing factor, whereas 16.66% of patients had H/o pelvic infection, which may have contributed to peritubal adhesions and impaired tubal motility, leading to ectopic pregnancies.

Laparotomy was done in 91.66% of patients. In 54.54% of patients, ectopic pregnancy was in the ampullary region and in 36.36% the isthmic part of the tube was involved as shown in Table 5.

Statistical Analysis

In our institute, the total number of deliveries from January 2018 to February 2020 was 4,367, of which 17 (0.381%) patients had ectopic pregnancy, whereas during the lockdown period from March 2020 to July 2020, 12 (1.94%) patients with ectopic pregnancy were admitted. So, the proportion of ectopic pregnancies was significantly higher during the lockdown period (Fisher's exact test $p = 0.02$).

Discussion

Ectopic pregnancies still contribute significantly to obstetric emergencies in the first trimester. In the developed world, 1 to 2% of all reported pregnancies are ectopic pregnancies. Treatment options include surgery, medical therapy, and observation for a very selective, limited number of patients.[8]

During the lockdown period, probably unevaluated patients with PID with infertility were not adequately managed and possibly this resulted in spontaneous pregnancies but at an extrauterine site. Many patients in the pipeline for ART procedures conceived and had ectopic pregnancies due to tubal factor infertility. The failure of contraception has also been added to the number of ectopic pregnancies.

The majority of women (50%) in our study belonged to the reproductive age-group of 26 to 30 years, which is close to the study done by Panchal et al.[9] The majority of women (66.66%) were multigravida. The higher incidence may be due to previous miscarriages, resulting in infections, leading to tubal damage.

In the present study, 41.66% of patients gave a H/o either medical termination of pregnancy kit intake or use of emergency

Table 5: Site of ectopic pregnancy on laparotomy ($n = 11$)

Site of ectopic	*Number*	*Percentage*
Ampulla	6	54.54
Isthmus	4	36.36
Cornual pregnancy	1	9.10

contraceptive pills. This was probably due to the inaccessibility of healthcare facilities during the lockdown period. PID contributed to 16.66% of cases. This is correlating to the study done by Gupta et al.,[10] in which 22.7% of patients with ectopic pregnancies had PID. Endosalpingitis due to PID may entrap the migrating embryo, leading to ectopic implantation and peritubal adhesions, and impaired peristaltic movements may also give rise to inadequate transportation.

IUCD as a risk factor was seen in 8% of patients. IUCD prevents intrauterine pregnancies but not ovarian and tubal pregnancies.[11] If a woman conceives with an IUCD in situ, the risk of a tubal pregnancy increases.

In our study, eight (66.6%) patients presented with ruptured ectopic pregnancy, two (16.66%) patients reported impending rupture, and only two patients came in an unruptured state with mild pain and were given methotrexate 50 mg/m^2, a single dose. Urine for pregnancy test, serum beta human chorionic gonadotropin (hCG), and ultrasound were the diagnostic tools used to confirm the diagnosis of ectopic pregnancies.

Laparotomy was done in eight patients with ruptured ectopic pregnancies, two with impending rupture, and one with failed medical management. Unilateral salpingectomy was the mode of treatment in ruptured ectopic pregnancies. Salpingostomy was done in three patients, two with impending rupture, and one with failed medical management. One patient responded to a single dose of methotrexate 50 mg/m^2. We avoided giving multiple doses of methotrexate, as a higher cumulative dose of methotrexate has the potential for more severe side effects.[12] Methotrexate is more effective in the treatment of ectopic gestation when a quantitative serum hCG level is less than 5000 mIU/mL and there is no fetal cardiac activity detected by ultrasonography.[8] Before giving methotrexate to patients with unruputured tubal pregnancies, laboratory investigation included a complete blood count, liver function tests, serum creatinine, and blood group.

Laparotomy was preferred in patients with ruptured ectopic pregnancies because during laparoscopy because of pneumoperitoneum viral particles in the surgical plume could potentially escape into the operation theater from leakage around an imperfect trocar seal and during rapid venting through trocars at the time of changing instruments, removing specimens, or desufflation at the conclusion of the operation.[13,14]

The commonest site of ectopic pregnancies was the ampulla (55.54%) of the fallopian tube. The ampullary part of the tube was also commonly involved in a study conducted by Swende and Jogo.[15]

The recent trend in the management of ectopic pregnancies is the use of conservative surgery or medical management but unilateral salpingectomy was the treatment modality in the majority (66.6%) of the cases in our study, as there was a delay in seeking medical advice and the patients reported a ruptured state of ectopic pregnancies. However, no maternal mortality was found in our study.

Conclusion

Our data raise serious concerns regarding the potential deleterious consequences of COVID-19 pandemic in women of reproductive age-group. It may be because accessibility to hospitals and medical advice took a back seat because of lockdown and restrictive movements during lockdown. We think that monitoring the indirect potential consequences of COVID-19 pandemic is imperative and the focus should be back to women's health and emergencies.

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