Repercussions of the COVID-19 pandemic in the emergency department of Gynecology and Obstetrics at a referral hospital in Portugal

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ABSTRACT

Objective. COVID-19 has spread worldwide and Portugal decreed the State of Emergency on March 18th, 2020. During this period, the population was encouraged to stay at home. Therefore, we aimed to compare the major causes for attending the Obstetrics and Gynaecology Emergency Department (ED) from a referral centre (Maternidade Dr. Alfredo da Costa, in Lisbon).

Materials and Methods. Several variables were collected and compared between two periods of time: from 19th March to 2nd April 2020 and the same period of 2019.

Results. During the COVID-19 pandemic period, 49.4% fewer patients visited the ED. We observed a higher number of urgent patients and hospitalization rate than previous year.

Conclusions. We experienced a reduction number of admissions to the Obstetrics and Gynaecology ED, but apparently the severity of cases that visited the ED increased.

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Since December 2019 it has spread worldwide when a number of patients with pneumonia of unknown aetiology emerged in Wuhan City, Hubei Province, Central China. Consequently, on March 11th, 2020, it was declared as a pandemic by the World Health Organization[1]. In Portugal, the first case was reported on 2nd March and the National Government decreed a State of Emergency on March 18th, 2020. On April 2nd, the State of Emergency was renewed and ended on May 2nd. During this period, the population was encouraged to stay at home; however, there were no restrictions on access to health care. Nevertheless, most non-urgent activities were suspended during this period and different services had to be reorganized to shift some personnel to departments in need, even in the ED, in order to receive COVID patients.
The main purpose of this study was to compare major causes of presentation to the Obstetrics and Gynaecology ED. Also, we compared the number and demographic characteristics of patients attending it, between March 19th and April 2nd, 2020, with the same period of 2019.

MATERIALS AND METHODS

This is an observational, retrospective and single-centre study focusing on the use of the Obstetrics and Gynaecology ED at Maternidade Dr. Alfredo da Costa during the COVID-19 pandemic. Maternidade Dr. Alfredo da Costa is the maternity of the Central Lisbon Hospital Centre (CHULC), placed in Lisbon, Portugal, and considered a referential centre with a differentiated perinatal support, where Obstetrics and Gynaecology ED is located. The maternity was identified as one of the COVID-19 referral centres for pregnant women with creation of new COVID dedicated medical wards. Our study was approved by the institutional ethics committee.

Data were collected from institutional clinical software of ED from March 19th to April 2nd, 2020 and also from the same period of the previous year. Clinical severity under the Manchester triage system (MTS), age, parity, complaints that motivated the visit to the ED and need for hospitalization were the considered variables. Patients were allocated in one of two groups: pregnant vs non-pregnant.

International ethical standards were used on the elaboration of this study.

Statistical analysis

Statistical analysis, including descriptive and bivariate analyses, was performed using IBM SPSS® 23.0 version. Normal distribution was checked using Shapiro-Wilk or Skewness and Kurtosis. Concerning bivariate analysis, Chi-Square statistic and independent- samples T-test were used. All reported P-values are two-tailed, with a P-value of 0.05 indicating statistical significance. Categorical variables were presented as frequencies and percentages and continuous variables as means and standard deviations.

RESULTS

A total of 1413 patients were admitted to our department on the aforementioned dates, respectively 938 in 2019 and 475 in 2020, which means that during the COVID-19 pandemic period, 49.4% fewer patients visited the Obstetrics and Gynaecology ED, compared with the same period of the previous year. The mean age of total patients in 2019 was 32.40 ± 9.75 years vs 31.65 ± 7.64 in 2020, without statistical significance (p = 0.116). Considering clinical severity grade under the MTS, when we compare the urgent patient group (identified with green and blue bracelets) in the two periods (25.40% and 74.60% in 2019 vs 27.80% and 72.80% in 2020, respectively), a statistically significant difference was found (p = 0.037). Regarding the hospitalization rate, it was higher during the COVID-19 pandemic than in homologous period of 2019 (16.3% vs 5.7%; p < 0.001).

Pregnant women were the more frequent group on Obstetrics and Gynaecology ED (76.50% in 2019 vs 83.2% in 2020; p = 0.004). In the pregnant group, the mean gestational age was 24.26 ± 13.26 in 2019 vs 26.55 ± 13.47 in 2020 (p = 0.007) and more than 50% were nulliparous women in both analysed periods (p = 1.000), as mentioned in Table 1. Pregnant women addressed more to the ED in the third trimester of pregnancy in both years (50.4% vs 58.7%). During COVID-19 time there was a significant increase compared to the year before (p = 0.008). The main cause of presentation to the ED in the pregnant group is shown in Table 2. Painful contractions were the most common reason of ED admission in 2020 (n = 95; 24.1% vs n = 136; 18.9% in 2019) with statistical significance (p = 0.05) and vaginal bleeding was the main reason in the 2019 period time (n = 152; 21.2% vs n = 74; 18.7%; p > 0.05). Pelvic pain (not related to contractions) had a lower incidence during the COVID-19 pandemic (9.1% vs 15.3%, p = 0.003). On the contrary, suspicion of amniotic fluid leak had a higher incidence in current year (13.7% vs 8.1% in 2019, p = 0.004). The rate of hospitalized women in the obstetric group was 21.2% (n = 152) in 2019 and 30.6% (n = 121) in 2020 (p = 0.001). Patients hospitalized in labour area totalized 74.3% in 2019 and 76.9% in 2020 (p = 0.673). One of the hospitalized pregnant-woman had a diagnosis of preterm premature rupture of membranes at 30 weeks’ gestation and she was infected with SARS-CoV-2. In this case, the patient was hospitalized in the new COVID medical ward for specialized care and precautions. Moreover, a minority of patients attended the emergency service having gynaecological or postpartum complaints (non-pregnant group). In this group, vaginal bleeding and pelvic pain were the most common pre-
sentation symptoms in the ED during the two analysed
periods (n = 77; 35% in 2019 vs n = 24; 30% in 2020; p >
0.05 and n = 38; 17.3% in 2019 vs n = 13; 16.3% in 2020;
p > 0.05, respectively). During the COVID-19 pandem-
ic, the incidence of amenorrhea (without diagnosis of
pregnancy) was higher than in the same period of 2019
(n = 6; 7.5% vs n = 2; 0.9%; p = 0.005). The remaining
complaints are described in Table 3. In non-pregnant
group, the number of hospitalized patients was similar
(0.5% in 2019 and 1.3% in 2020; p > 0.05).

**DISCUSSION**

Recommendations from the national Government
alerted people to remain at home during the presum-
ably worst time of the COVID-19 pandemic [2]. This
contributed to a significant decrease in the health care
services, specifically Obstetrics and Gynaecology ED,
as shown in our study. Recent studies regarding the
COVID-19 pandemic, the incidence of amenorrhea (without diagnosis of pregnancy) was higher than in the same period of 2019 (n = 6; 7.5% vs n = 2; 0.9%; p = 0.005). The remaining complaints are described in Table 3. In non-pregnant group, the number of hospitalized patients was similar (0.5% in 2019 and 1.3% in 2020; p > 0.05).

On the other hand, and based on the Manchester
triage system, we demonstrate a larger and signifi-
cant affluence to the ED of urgent patients (orange
and yellow bracelets) and an increase of the hospi-
talization rate during the COVID period occurred,
including in the pregnant group. We consider
that the populations’ reluctance to address the ED
during this contingency period contributed to a re-
duction in the ED attendance for mild symptoms
and a search for specialized help only with more
severe symptoms at later stages of disease.

Pregnant women used more often the ED during the
third trimester, which is also described by other au-
thors [7]. It probably occurs because during the last
weeks of pregnancy women experience some symp-
toms that can be related with starting of labour and
all patients came to the ED at least once, to deliver.
Experiencing other pregnancies could change the
pattern of coming to the ED, so we presume that multiparas would understand better the complaints that occur during pregnancy. In our study, a lower inflow of multiparas to the ED was observed, without statistical significance, though. Possibly the sample size has not been large enough to find these differences.

Regarding the causes for attendance at the ED among the pregnant group, we demonstrate that there was a big number of patients with important complaints, such as painful contractions and suspicion of amniotic fluid loss, during the COVID period. Furthermore, we found a significant reduction in other complaints of pregnant women, such as vaginal discharge, considered less serious [8]. Fewer pregnant women accessed the ED with pelvic pain during the COVID period time. This nonspecific symptom can occur throughout pregnancy, with several causes and severity differences, so it cannot be undervalued. We didn’t observe a significant difference in the remaining complaints.

In non-pregnant group, another non-urgent indication[7], amenorrhea (without pregnancy diagnosis), was a more frequent symptom during 2020 than in 2019. This could be related to the confinement at home, so it could be easier to access to the ED for the pregnancy detection and reassurance of women, instead of buying themselves a pregnancy test.

The authors of this study recognize an important limitation related to its retrospective nature and to the fact that only the first two weeks of the state of emergency in Portugal have been studied. We decided to analyse this period of time, given the current relevance of the topic and as it was an adaptation period with important changes in hospital services. The world countries dealt with the pandemic in different ways due to its novelty and to

**Table 2. Causes of presentation to the ED.**

<table>
<thead>
<tr>
<th>Pregnant group</th>
<th>2019 n (%)</th>
<th>2020 n (%)</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal bleeding</td>
<td>152 (21.2)</td>
<td>74 (18.7)</td>
<td>0.351</td>
</tr>
<tr>
<td>Pelvic pain</td>
<td>110 (15.3)</td>
<td>36 (9.1)</td>
<td>0.003</td>
</tr>
<tr>
<td>Painful contraction</td>
<td>136 (18.9)</td>
<td>95 (24.1)</td>
<td>0.053</td>
</tr>
<tr>
<td>Suspected of amniotic fluid leak</td>
<td>58 (8.1)</td>
<td>54 (13.7)</td>
<td>0.004</td>
</tr>
<tr>
<td>Decreased fetal movements</td>
<td>28 (3.9)</td>
<td>12 (3.0)</td>
<td>0.565</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>28 (3.9)</td>
<td>13 (3.3)</td>
<td>0.740</td>
</tr>
<tr>
<td>Vulvar pain</td>
<td>0 (0)</td>
<td>2 (0.5)</td>
<td>0.126</td>
</tr>
<tr>
<td>Vaginal discharge</td>
<td>21 (2.9)</td>
<td>4 (1.0)</td>
<td>0.003</td>
</tr>
<tr>
<td>Routine antenal control</td>
<td>56 (7.8)</td>
<td>33 (8.4)</td>
<td>0.731</td>
</tr>
<tr>
<td>Gastrointestinal symptoms</td>
<td>19 (2.6)</td>
<td>12 (3.0)</td>
<td>0.707</td>
</tr>
<tr>
<td>Genitourinary symptoms</td>
<td>23 (3.2)</td>
<td>12 (4.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Amenorrhea</td>
<td>32 (4.5)</td>
<td>19 (4.8)</td>
<td>0.767</td>
</tr>
<tr>
<td>Others</td>
<td>55 (7.7)</td>
<td>28 (7.1)</td>
<td>0.812</td>
</tr>
<tr>
<td>Total</td>
<td>718 (100)</td>
<td>395 (100)</td>
<td></td>
</tr>
</tbody>
</table>

*aPearson chi-squared test.

**Table 3. Causes of presentation to the ED.**

<table>
<thead>
<tr>
<th>Non-pregnant group</th>
<th>2019 n (%)</th>
<th>2020 n (%)</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal bleeding</td>
<td>77 (35.0)</td>
<td>24 (30.0)</td>
<td>0.490</td>
</tr>
<tr>
<td>Pelvic pain</td>
<td>38 (17.3)</td>
<td>13 (16.3)</td>
<td>1.000</td>
</tr>
<tr>
<td>Vulvar pain</td>
<td>17 (7.7)</td>
<td>3 (3.0)</td>
<td>0.299</td>
</tr>
<tr>
<td>Vaginal discharge</td>
<td>26 (11.8)</td>
<td>10 (12.5)</td>
<td>0.843</td>
</tr>
<tr>
<td>Genitourinary symptoms</td>
<td>19 (8.6)</td>
<td>7 (8.8)</td>
<td>1.000</td>
</tr>
<tr>
<td>Amenorrhea</td>
<td>2 (0.9)</td>
<td>6 (7.5)</td>
<td>0.005</td>
</tr>
<tr>
<td>Mastalgia</td>
<td>11 (5)</td>
<td>8 (10)</td>
<td>0.177</td>
</tr>
<tr>
<td>High blood pressure (postpartum)</td>
<td>2 (0.9)</td>
<td>0 (0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Routine postpartum control</td>
<td>6 (2.7)</td>
<td>5 (6.3)</td>
<td>0.170</td>
</tr>
<tr>
<td>Others</td>
<td>22 (10)</td>
<td>4 (5)</td>
<td>0.246</td>
</tr>
<tr>
<td>Total</td>
<td>220 (100)</td>
<td>80 (100)</td>
<td></td>
</tr>
</tbody>
</table>

*aPearson chi-squared test.*
the lack of unanimous consent on the best health-care management strategies.

CONCLUSIONS

The pandemic COVID-19 caught the world and especially the health care off guard and it was necessary to restructure health services, including the ED, to create new dedicated COVID-19 areas. It was supposed that urgent situations continued to be done, contrarily to different non-urgent care that was postponed. Even so, the number of admissions to the Obstetrics and Gynaecology ED decreased. On the contrary, it seems that the severity of the cases that recurred increased. The consequences of COVID-19 are yet to be determined and it would be interesting additional research to prolong observations, including a longer interval.

COMPLIANCE WITH ETHICAL STANDARD

Authors contribution

All authors contributed equally to the work.

Fundings

None.

Study registration

N/A

Disclosure of interests

The authors declare that they have no conflict of interests.

Ethical approval

This study obtained ethical approval by Ethics Committee from Centro Hospitalar Universitário Lisboa Central, Lisbon, Portugal (protocol number 919/2020 - 02/26/2021).

Informed consent

Exemption from informed consent were requested, with the justification that the study was important and had be carried out in a short period of time, with an exclusively investigative purpose. Only pseudonymized data were used. As this was an exceptional situation, the general rule of obligatoriness to obtain informed consent, which is also legally provided in article 06, n° 1 d) of law n° 21/2014 of April 16, it becomed necessary to justify that request.

Data sharing

Data are available under reasonable request to the corresponding author.

REFERENCES