

COVID-19 infection in symptomatic pregnant women at the midpoint of the pandemic in Spain: a retrospective analysis

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ABSTRACT

Objectives: Determine the strengths and weakness of a symptomatic screening for COVID-19 in pregnant women. Analyze the clinical presentation, management, and outcomes. Design: Descriptive retrospective observational study. Setting: Mancha-Centro Hospital (Spain).

Material and methods: Population: Symptomatic pregnant women with confirmed diagnosis of COVID-19. Between the 12th of March and 17th of April 2020, all the symptomatic pregnancies were screened with diagnostic test for SARS-CoV-2. Data collection was done by reviewing the medical records and telephone interviews. Main outcome measures: Clinical characteristics, management, treatment, and obstetric and neonatal outcomes.

Results: Twenty patients with positive COVID-19 diagnostic test out of thirty-four suspected. The most common symptoms were fever (70%), cough (65%) and myalgia (35%). A unique symptom of presentation in 20% of cases. COVID-19 pneumonia was diagnosed in 30% by chest X-ray and one case had pulmonary embolism associated diagnosed by CT-Scan. Thromboprophylaxis was indicated in 16 out of 20 patients. Eight women finished their pregnancy during the observation period. Type of birth: 25% natural birth, 12.5% assisted vaginal delivery and 62.5% caesarean section. We had three severe cases, two of them with intensive care support. All neonates had negative test for COVID-19 infection.

Conclusions: We recommend universal screening of all pregnant woman for COVID-19 during the pandemic because of the limits of the symptomatic screening seen in this studio and the ratio of asymptomatic pregnancies with positive test for COVID-19 recently published.

Key words: COVID-19; pregnancy; screening; outcomes; symptoms; delivery

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INTRODUCTION

The World Health Organization (WHO) designates COVID-19 as a new disease caused by the virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. This infection was defined as a pandemic the 11th of March of 2020 because of the alarming levels of spread and severity of the disease [2].

Spain is second in the world in number of infections with around 223,000 [3]. It is the first country in mortality with a ratio of 48.21 deaths per 100,000 population [3]. That means a lethality of the virus is 10.2%, reviewing the data collected until the 25th of April [3].

Our center, Hospital Mancha Centro, is one of the four-placed in a region of Spain called Castilla La Mancha.

This area is one of the “hot spots” of the pandemic in Spain. With a mortality ratio of 174 deaths per 100,000 population, it represents 11 of each 100 deaths of COVID-19 in Spain, numbers found similar in the most devastated areas worldwide. Our hospital has one of the highest ratio of hospitalizations per population in Spain reaching the maximum of 4.34 hospitalized patients per 1,000 population the past 4th of April [4].

The management of the obstetric population during the pandemic is a big challenge because of the limited specific information (based in case series reports about pregnancy and COVID-19 [5–8]), the need for hospital monitoring during pregnancy and the necessary incomes for labour with the risk of infection that implies access to the hospital during the pandemic.

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What remains to be clear are the clinical characteristics of the obstetric population infected by SARS-CoV-2, the real risks of vertical transmission, course of medical treatment, obstetric management, the balance of risk/benefit of maternal breastfeeding and quarantine appliance to mother-newborn [9–15]. To clarify this gap, we present our descriptive study analyzing the clinical presentation, management and obstetric — neonates outcomes of symptomatic pregnant woman with confirmed positive test for COVID-19.

MATERIAL AND METHODS

Study design and population

This article presents a descriptive retrospective observational study on a non-probabilistic sample of symptomatic pregnant women with confirmed diagnosis of COVID-19 infection seen at a secondary hospital between the 12th of March and the 17th of April 2020.

The inclusion criteria were all pregnancies with a confirmed COVID-19 infection diagnosed by qualitative serological positive antibody test and/or detection of real-time reverse transcription polymerase chain reaction (RT-PCR) from a nasopharyngeal exudate sample. All patients were selected, in various pregnancy trimesters or puerperal period, for carrying out the diagnostic tests if they presented any of the following symptoms compatible with the SARS-CoV-2 infection: fever over 37.8°C, cough, dyspnea, dysgeusia, anosmia, headache or myalgia. There were no exclusion criteriums.

Positive cases were closely monitored (by phone or in consultation) following the new protocol designed in the obstetrics department of the Mancha-Centro Hospital. All the complementary studies done (complete blood count, biochemistry, C-reactive protein, D-dimer, chest X-ray or CT scan) and the specific treatment measures were prescribed according to the clinical needs of each patient. Antenatal corticoids treatment for fetal lung maturation were indicated without changing our habitual protocol of preterm pregnancy up until 34 weeks. Thromboprophylaxis treatment with low molecular weight (LMW) heparin was indicated following the recommendations of the International Society of Thrombosis and Hemostasis [16] and the Spanish Society of Gynecology and Obstetrics [17].

Birth and puerperium of the positive patients was done in a specific isolated delivery room by an obstetric team formed by a midwife and a gynecologist, with personal protective equipment (PPE). The newborns were separated from the mothers after birth and studied by nasopharyngeal exudate sample, analyzed for SARS-CoV-2 by RT-PCR. If the companion of the pregnant women, studied by diagnostic test, was negative for COVID-19, they had the possibility to be with their newborn during the isolated hospital admission. Breastfeeding was discouraged until a negative result

of the maternal RT-PCR. To maintain the stimulation during mother-child quarantine, breast pump extraction was performed, and breast milk was discarded.

Data collection

The information for the study was collected in two steps: review of the medical records and by telephone interview. Through the clinical history we reassessed the dates of birth and pregnancy, gestational age at birth, laboratory testing, needs of intensive care or hospitalization, treatment for the COVID-19 infection, complications (during pregnancy or birth and puerperium), type of anesthesia used during labor, method of birth, weight of the newborn, Apgar score, type of neonatal reanimation, skin to skin contact, type of cord clamping and lactation. All of the information was recorded in a personalized data form for each patient. After the first reviewing step, the clinical data was re-evaluated by telephone interview, making an overhaul of the items of the clinical history, and finishing with a re-examination of the compliance with treatment and recommendations given at discharge.

The starting date of COVID-19 infection was considered when the patient reported the beginning of the symptoms. The pneumonia diagnostic criteriums were based in radiologic findings and its severity defined by the recommendations of the Infectious Diseases Society of America/American Thoracic Society (IDSA/ATS) [18].

The severe cases follow at least one of the next clinical criteriums: severe respiratory distress, respiratory failure requiring mechanical ventilation or shock and organ failure requiring intensive care.

Statistical analysis

Continuous variables were expressed as means with their standard deviation (SD). For the quantitative variables we defined their absolute and relative frequencies. All the statistical analysis is descriptive and has been carried out using the statistical software SPSS v24.0.

No funding supports this study.

RESULTS

The total number of pregnant women with COVID-19 (confirmed by laboratory tests) was 20 out of 34 suspected cases with compatible clinic. The medium age of the patients was 34.9 years (SD = 5.00). Among all the infected pregnancies, 55% (11/20) were in their third trimester of gestation and 40% (8/20) gave birth during the study period.

Clinical features

The most common symptoms were fever over 37.8°C present in 70% (14/20), cough in 65% (13/20) and myalgia in 35% (7/20). We studied the proportion of cases with

multiple symptoms compared to patients with one isolated symptom and we found that 20% (4/20) of them had one unique symptom (fever 2/20 and myalgia 2/20).

On the date of diagnosis of COVID-19 infection, the media of the laboratory tests were: Lymphocytes $1.66 \times 10^3/\mu\text{L}$ (SD = 0.68), D-dimer $2.04 \mu\text{g/mL}$ (SD = 3.36) and C-Reactive Protein (CRP) 5.10 mg/dL (SD = 7.64).

The analysis of the relationship between symptoms and complementary studies showed that in the pregnancies with dyspnea the 66.7% (2/3) presented a radiologic diagnosis of COVID-19 pneumonia. When we compared the laboratory tests with each symptom, we found that the lowest value of lymphocytes with a media of 1.00 (SD = 0.10) was in the dyspnea patients while the highest values of D-dimer and CRP were in the pregnancies with myalgia with a media of 5.56 (SD = 6.03) and 9.80 (SD = 12.22) respectively.

All the clinical characteristics and their relationship with the complementary studies are shown in Table 1.

Regarding the transmission of the disease, 50% (10/20) of the pregnancies reported an unknown origin, 35% (7/20) had contact with a symptomatic person and 15% (3/20) assured that the risk of infection was inside the hospital.

The diagnosis was established by qualitative serologic tests in 12 of the 15 cases and by RT-PCR in 11 of the 13 patients in which they were done. In 10 patients we made chest

X-rays, finding 60% (6/10) radiologic images compatible with COVID-19 pneumonia (Tab. 2., Fig. 1).

Hospital admissions were 40% (8/20) of the patients and related to labour or maternal disease. Most of the pregnancies 70% (14/20) hadn't had any pregestational pathology. As remarkable risks, two patients with obesity (body mass index over 30 Kg/m^2) and another two smokers. Also, two patients had preeclampsia as a relevant pregnancy disease.

Prophylaxis of thromboembolic events with LMW heparin was prescribed in 80% (16/20) of the patients.

Obstetric results and newborn outcomes

Eight women, positive for COVID-19, finished their pregnancy during the observation period. Two of them before 34 weeks of gestation, three between 34–37 weeks and another three on term. From them, 87.5% (7/8) presented normal prenatal growth and morphological ultrasound. We found only one case of intrauterine growth restriction associated with severe preeclampsia.

Regarding the type of delivery, 25% (2/8) had a natural birth, 12.5% (1/8) an assisted vaginal birth and 62.5% (5/8) finished on cesarean section. There weren't any cases of induction of labour on maternal benefit.

Five patients of the total of births were classified as non-severe COVID-19 infection. In this group we observed two natural and one assisted vaginal birth, all of whom used

Table 1. COVID-19 symptomatology in pregnant women and correlation with imaging and laboratory tests

Variables	Total	Temperature > 37.8°C	Cough	Dyspnea	Dysgeusia	Anosmia	Headache	Myalgia
		% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
		70.0 (14)	65.0 (13)	15.0 (3)	20.0 (4)	30.0 (6)	25.0 (5)	35.0 (7)
Number of combined symptoms	Total % (n)	n	n	n	n	n	n	n
1	20.0 (4)	2	0	0	0	0	0	2
2	25.0 (5)	3	4	0	1	2	0	0
3	40.0 (8)	6	6	2	1	2	3	4
4	5.0 (1)	1	1	0	0	0	1	1
5	10.0 (2)	2	2	1	2	2	1	0
Chest X-ray	Total % (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
None	50.0 (10)	50.0 (7)	53.8 (7)	0.0 (0)	25.0 (1)	50.0 (3)	80.0 (4)	71.4 (5)
No signs of COVID	20.0 (4)	21.4 (3)	30.8 (4)	33.3 (1)	50.0 (2)	33.3 (2)	0.0 (0)	0.0 (0)
COVID pneumonia	30.0 (6)	28.6 (4)	15.4 (2)	66.7 (2)	25.0 (1)	16.7 (1)	20.0 (1)	28.6 (2)
	Total Mean (DE)	Mean (DE)	Mean (DE)	Mean (DE)	Mean (DE)	Mean (DE)	Mean (DE)	Mean (DE)
Lymphopenia $\wedge 3/\mu\text{L}$	1.66 (0.68)	1.59 (0.69)	1.67 (0.69)	1.00 (0.10)*	1.93 (0.72)	1.90 (0.56)	1.92 (0.79)	1.67 (0.98)
D- Dimer $\mu\text{g/mL}$	2.04 (3.36)	2.18 (3.91)	2.42 (4.11)	0.65 (0.58)	0.77 (0.68)	0.77 (0.68)	0.35 (0.01)	5.56 (6.03)*
C Reactive Protein (CRP) mg/dL	5.10 (7.64)	6.87 (8.71)	6.51 (9.38)	6.53 (5.69)	0.60 (0.37)	0.60 (0.37)	4.80 (5.37)	9.80 (12.22)*

*Higher value of analytic result according to each symptom

Table 2. Diagnosis, treatment and clinical evolution for all the pregnancies and severe cases			
	Total % (n = 20)	Puerperium (n = 8)	Severe cases (n = 3)
Variables	% (n)	% (n)	% (n)
Age			
Media (DE)	34.9 (4.90)	35.3 (5.97)	36.0 (5.57)
Infectious transmission			
Unknown	50.0 (10)	62.5 (5)	0.0 (0)
Symptomatic family	35.0 (7)	12.5 (1)	33.3 (1)
In-Hospital	15.0 (3)	25.0 (2)	66.7 (2)
Diagnosis			
Rapid test positive	80.0 (12/15)	75.0 (6/8)	100 (3/3)
RT PCR positive	85.0 (11/13)	50.0 (4/8)	N.A. (0/0)
Pregestational morbidity	40.0 (8)	37.5 (3)	33.3 (1)
Gestational morbidity	30.0 (6)	62.5 (5)	66.7 (2)
Hospitalization	40.0 (8)	100.0 (8)	100 (3)
Intensive care	10.0 (2)	25.0 (2)	66.7 (2)
Respiratory distress on labor	5.0 (1)	12.5 (1)	33.3 (1)
Chest X-Ray			
None	50.0 (10)	0.0 (0)	0.0 (0)
No signs of COVID-19	20.0 (4)	25.0 (2)	0.0 (0)
COVID-19 pneumonia	30.0 (6)	75.0 (6)	100 (3)
Treatment			
Symptomatic	15.0 (3)	0.0 (0)	0 (0)
Hydroxychloroquine	30.0 (6)	75.0 (6)	100 (3)
Antibiotics	25.0 (5)	62.5 (5)	66.7 (2)
Oxygen support	15.0 (3)	20.0 (2)	66.7 (2)
Lopinavir/ritonavir	15.0 (3)	20.0 (2)	66.7 (2)
Interferon	10.0 (2)	20.0 (2)	66.7 (2)
LMWH	80.0 (16)	87.5 (6)	100 (3)
Lymphopenia 3/μL			
Media (DE)	1.66 (0.68)	1.30 (0.67)	0.80 (0.36)
D-dimer μg/ml			
Media (DE)	2.04 (3.36)	2.58 (4.07)	4.73 (6.76)
CRP mg/dl			
Media (DE)	5.10 (7.64)	6.96 (9.07)	15.63 (10.25)

N.A. — not accomplished

epidural anesthesia and presented normal oxygen saturation with values over 95% in pulse oximetry during labour. In this non-severe group, we didn't find any episodes of intrapartum desaturation that indicated cesarean section and internal fetal heart monitoring was avoided. The indication of the two cesarean sections were an obstructed labour and a programmed cesarean section on maternal request for denied vaginal birth after cesarean.

The three rest of cesarean sections were done in severe cases of COVID-19 infection which we present below.

The first case was a pregnant woman of 28 weeks with severe pneumonia upon admission and had a negative

response to medical treatment. She needed invasive mechanical ventilation because of an oxygen saturation less than 90%. At that point we completed her pregnancy by cesarean section with general anesthesia and posterior intensive care admission (Fig. 1).

The second case was an asymptomatic pregnancy of 34 weeks with preterm rupture of membranes. A cesarean section was indicated because of breech presentation and done with spine anesthesia. During her puerperium she started with a rapid onset of severe respiratory distress with mild symptoms of COVID-19 infection. Without other thrombotic risk factors more than the cesarean section, she

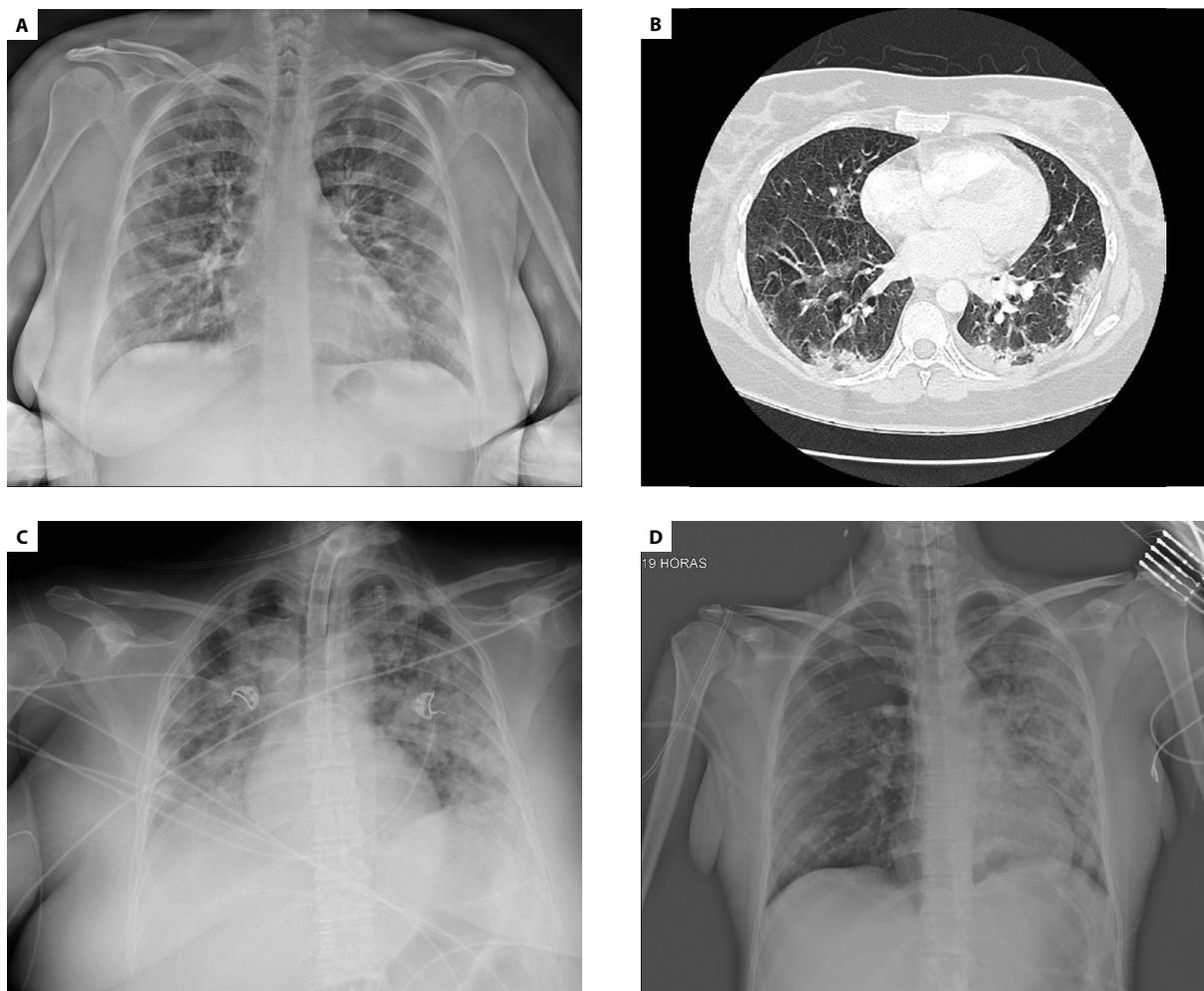


Figure 1. Radiologic findings of severe cases; (A–B) 29 years, 34 + 3 weeks. Pulmonary embolism and pneumonia at the third day of puerperium; (C) 47 years, 29 weeks. Severe preeclampsia. COVID-19 pneumonia. Intensive care; (D) 32 years, 29 weeks. COVID-19 pneumonia. Intensive care

had a pulmonary embolism combined with COVID-19 pneumonia diagnosed on CT scan (Fig. 1).

The third case was a high-risk pregnancy by in vitro fertilization with egg donation of an obese woman at 47 years of age. At 28 weeks of pregnancy she needed admission for hypertensive medical control and was diagnosed of severe preeclampsia. During her hospital stay she started with a combination of urologic infection and respiratory symptoms being diagnosed with a SARS-CoV-2 respiratory infection and urological sepsis. At 29 weeks she finished via cesarean section with general anesthesia on maternal benefit because of a poor response to medical treatment with bad clinical and analytic evolution and she was taken to the intensive care unit (Fig. 1). On the 5th day of puerperium, she started with an early multiorgan failure with a massive postpartum bleeding, so an abdominal hysterectomy was done.

All the severe COVID-19 infection patients were managed with prophylactic heparin treatment, hydroxychloroquine and lopinavir/ritonavir. The pregnancies less

than 34 weeks also received antibiotic treatment, oxygen support, interferon and antenatal corticosteroids for fetal lung maturation.

The severe group presented a higher degree of analytic changes with the next medias: D-dimer 4.73 $\mu\text{g}/\text{mL}$, CRP 15.63 mg/dL and lymphocytes 0.8 $10^3/\mu\text{L}$.

After birth, 87.5% (7/8) of the cases had an early cord clamping. One case of skin to skin contact was allowed because the infection wasn't known until the 3rd day after birth.

All patients with a vaginal birth were accompanied by a relative with contact restrictions and PPE. All the non-severe cases were discharged without any puerperal complications on the first 24 h postpartum.

About the neonatal outcomes we founded a medium weigh of 2560.8 g (SD = 980.9), medium Apgar score at first minute of 8.25 (SD = 1.39) and at fifth minute of 9.38 (SD = 0.92). About the type of reanimation of the newborn was type I in 12.5% (1/8) and type III in 37.5% (3/8) and no reanimation in 50% (4/8). Breastfeeding was mainly maternal

63.5% (5/8), one being directly from the maternal breast and the remaining four stimulated by breast pump until a negative COVID-19 result. All the neonates were accompanied by an asymptomatic relative with negative result of RT-PCR COVID-19. No clinical or serologic evidence of vertical transmission was noticed, and no neonatal deaths were reported.

The most relevant details of the obstetric and newborn results are resumed in the Table 3.

DISCUSSION

Main findings

Our study demonstrates a relevant percentage of 20% (4/20) of pregnancies with just one symptom at the time of diagnosis. We observed a 60% (6/10) of radiologic findings of COVID-19 pneumonia in those patients studied with chest X-ray.

During labour, two cesarean sections were done to improve maternal oxygenation in two patients with severe clinical state. The remaining 75% (6/8) didn't have any respiratory distress.

Thromboprophylaxis treatment with (LMW) heparin was indicated in 80% (16/20) of the pregnancies regardless of the symptoms and D-dimer. However, we report a case of pulmonary thromboembolism during puerperium on a COVID-19 pneumonia.

The main recommendations about newborn management as early cord clamping and mother–neonate isolation where done in 87.5% (7/8) cases. All neonates were accompanied by an asymptomatic relative with negative result of RT-PCR COVID-19.

The postpartum period went without complications in 62.5% (5/8) so the mother could have an early hospital discharge in the first 24 hours.

Strengths and limitations

This study is one of the first case series reports published from Spain about the pandemic COVID-19 in pregnant women with symptoms and positive RT-PCR. Our hospital is part of a region in Spain, called Castilla La Mancha, with one of the highest mortality rates (113 deaths per 100,000 population). It was one of the most affected areas worldwide just surpassed by Madrid (Spain), Lombardy (Italy) and New York (USA) with 118, 126 and 120 deaths per 100,000 each respectively, on the 25th of April [19].

Currently, there are few completed studies published with the recompilation of symptoms, information about clinical exposure, details about the pregnancy and postpartum treatment as well as the obstetrical complications and critical care of the severe cases. We have detailed the type of quarantine, anesthesia, oxygen saturation during labour and breastfeeding of the newborns.

Table 3. Obstetric and neonatal outcomes; n = 8

Variables	Total % (n)
Gestational age	
< 34 weeks	25.0 (2)
34–37 weeks	37.5 (3)
> 37 weeks	37.5 (3)
Induction of labor	12.5 (1)
Intrapartum fever	12.5 (1)
Oxygen saturation on labor	
> 95%	75.0 (6)
90–95%	12.5 (1)
< 90%	12.5 (1)
Type of anesthesia	
Spinal	25.0 (2)
Epidural	50.0 (4)
General	25.0 (2)
Type of birth	
Eutocic delivery	25.0 (2)
Assisted vaginal delivery	12.5 (1)
Caesarean section	62.5 (5)
Puerperium	
Pneumonia	75.0 (6)
Pulmonary embolism	12.5 (1)
Postpartum hemorrhage	25.0 (2)
Newborn weigh	
Media (DE)	2680.8 (980.9)
Early cord clamping	87.5 (7)
Skin to skin contact	12.5 (1)
Apgar minute 1	
Media (DE)	8.25 (1.39)
Apgar minute 5	
Media (DE)	9.38 (0.92)
Type of neonatal reanimation	
No reanimation	50.0 (4)
Type I	12.5 (1)
Type II	0 (0)
Type III	37.5 (3)
Type of breastfeeding	
Artificial	37.5 (3)
Maternal with breast pump until negative	25.0 (2)
Direct maternal	12.5 (1)
Direct and breast pump	25.0 (2)

It must be taken into account that this study has excluded all pregnant woman with symptoms and compatible radiological diagnose of COVID-19 pneumonia without

confirmation via positive test for SARS-CoV-2. Consequence of the limitations of availability and diagnostic capacity of the tests for COVID-19 in Spain.

Thromboprophylaxis in pregnant women during the pandemic has been one of the main challenges of the treatment. During the period of the study, different views and protocols had been published and that is why just 16 out of 20 patients of our cohort had received LMW heparin.

Interpretation

The optimal management of the pregnant women during the COVID-19 pandemic has been a big challenge for our obstetric department. At the beginning of the pandemic we needed to decide the suspicious symptoms in pregnant patients and the type of diagnostic tests that apply to them. After that, design the specific pathways of isolation for the maternal and neonatal care, doing staff training on the use of the PPE. Additionally, we have developed a hotline for the patients to report their symptoms before their arrival to the hospital, following the recommendations of the Center for Disease Control and prevention (CDC) [20].

The need for implementation of a universal screening for all the pregnant women admitted to the labour room has been one of the main discussions of management. In hospitals where it has been done, the prevalence of COVID-19 in asymptomatic patients published is 13.5% [21] and 13% [22]. In our department, during the period of the study, we have conducted a symptomatic screening excluding from our result ten patients with compatible symptoms but negative RT-PCR. We should take into account that we were limited by the local availability of the test for COVID-19 and their diagnostic accuracy. In our hospital each nasopharyngeal test was done with the kit GeneXPert SARS-CoV-2, giving the results of sensitivity and specificity of 35% and 96%. We also used an IgM/IgG rapid detection test. This kind of test could be criticized for an initial screening test because of the window period [23] but in our study, as it was used in symptomatic patients, it was useful. As a result of these factors, we decided to change since the last 20th of April to a universal screening of all the pregnancies in our obstetric department.

About the symptoms analyzed, most of our pregnancies had fever and cough as their more common symptoms, like the results of Guan et al. and Wang et al. [24, 25]. We have considered anosmia and ageusia as compatible symptoms for COVID-19 [26–28], reporting in our series 4/20 pregnancies with ageusia and 6/20 with anosmia.

Thromboprophylaxis on the pregnant women with COVID-19 is recommended during pregnancy and puerperium with LMW heparin, even though the studies are limited

and presently unknown if the prophylactic or therapeutic anticoagulation has any impact in the result of the infection [15]. Even though the level of D-dimer could be normally higher during pregnancy, we consider COVID-19 infection and a higher level of D-dimer as the main thrombotic factors. They are related to a higher risk of venous thromboembolism, severity and mortality of the disease [25, 29, 30]. In our study the severe cases had a D-dimer media of 4.73 µg/mL (SD = 6.76) and a case of pulmonary embolism has been diagnosed although the treatment with 40 mg of heparin each 24 hours.

The severity and mortality of the disease had been related to cardiovascular disease, diabetes, hypertensive disorders and obesity (BMI ≥ 30) [31, 32]. In pregnant women with COVID-19, we should consider the impact on risk of hyperglycemias, weight gain and preeclampsia. Nowadays, there are no studies proving the relationship in pregnant women, but it is logical to suppose that those risk factors will worsen the pregnancies prognosis. The published studies report similar morbidity to our series [5, 6, 8, 33] and the reports of Breslin et al. [5] involving two maternal intensive care admissions of mothers with high BMI (> 35) leads one to question if COVID-19 increases the risk of severe morbidity in high risk pregnancies.

We consider that the correct management of these high-risk pregnancies is the key and should be done by established protocols and with preventive measures like the prophylaxis with aspirin [10].

CONCLUSIONS

The symptomatic screening for COVID-19 on pregnant women is limited by two main factors: the percentage of pregnancies with just one symptom at hospitalization, in our cohort a 20%, and by the local availability and reliability of the diagnostic test during the pandemic. Combining this information with the results reported in the literature of asymptomatic pregnancies with positive diagnostic test for COVID-19 and the implications of the misdiagnosing, we recommend to start routine testing for SARS-CoV-2 in obstetric patients at their hospitalization, regardless of their symptoms or the reason for admission.

The symptoms and severity of the infection among pregnant women is normally between mild and moderate, so we consider appropriate the vaginal birth excepting those patients with bad clinical response or respiratory distress during labour.

We recommend doing an big effort on the information for patients and a share decision making about the mother–newborn isolation in positive cases of COVID-19 since the fear can lead a pregnant mother to minimize or even deny the suspicious symptoms.

Conflict of interests

The authors declare no competing interests. Completed disclosure of interest forms are available to view online as supporting information.

Contribution to authorship

EOM and MPG conceived the study question. MPG and RHP collected the data. AHM performed the statistical analyses. EOM, MPG and RHP drafted the first version of the manuscript and it was revised and approved by APP and ERR. AHM wrote the abstract.

Details of ethics approval

Local IRB (Institutional Review Board) was consulted, being this article was exempt from the need for approval because of the non-interventional, observational study and the sanitary emergency. This work has also the approval of the medical director of our center and each pregnant woman was informed about the study and gave their consent to use their clinical information. The ethics principles have been respected. All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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