Annals of Clinical and Medical Case Reports

Case Report ISSN: 2639-8109 | Volume 8

Severe Respiratory Failure from SARS COV 2, Complicated with Pneumothorax in a Pregnant Woman: A Case Report

Como N[1], Gjermeni N[1*], Meta E[1], Kraja D[1], Hysenaj Z[2], Osmenaj R[3], Gradica F[4] and Mesi A[5]

[1]Infectious Disease Service, University Hospital Centre, Mother Theresa, Tirana, Albania.

[2]Intensive Care Unit, University Hospital Centre, Mother Theresa, Tirana, Albania.

[3]Radiology Unit, University Hospital Centre, Mother Theresa, Tirana, Albania.

[4]Thorasic Surgery Unit, University Hospital Pulmonary Diseases, Tirana, Albania

[5]WHO National Professional Officer, Tirana, Albania

[*]Corresponding author:

Nevila Gjermeni,
Infectious Disease Service, University Hospital Centre, Mother Theresa, Tirana, Albania,
Tel: 672082295,
E-mail: nevilagjermeni@yahoo.com

Received: 09 Feb 2022
Accepted: 23 Feb 2022
Published: 01 Mar 2022
J Short Name: ACMCR

Citation:

Gjermeni N, Severe Respiratory Failure from SARS COV 2, Complicated with Pneumothorax in a Pregnant Woman: A Case Report. Ann Clin Med Case Rep. 2022; V8(12): 1-4

Keywords:

COVID 19; Pregnancy; Pneumothorax; Severe form; Caesarean section

1. Abstract

1.1. Introduction: The first data for COVID-19 in pregnancy showed mild to moderate forms of the disease while current data speaks of severe forms in these subjects. Here we present a case of a severe form of COVID-19 in a gemelar pregnant woman complicated with pneumomediastin and pneumothorax, during her hospital stay, in a late stage of disease.

1.2. Case presentation: A 38-year-old multiparous woman was referred to university hospital at 25 weeks of general pregnancy. On admission, the patient presented with signs of moderate respiratory insufficiency, which after 12 hours progressed further to severe ARDS. She tested positive for SARS COV 2 on quantitative real-time polymerase chain reaction. Under these conditions it was decided that the patient undergo a caesarean section for termination of pregnancy. Remdesivir 200 mg/day and tocilizumab 8 mg/kg were administered, based on national guidelines. The patient's fever subsided, but her SpO2 remained at 94%, even with a 15 L/min oxygen mask. After 12 days the patient complains of a severe back pain and her respiratory condition rapidly worsened, reduced saturations up to 80% being under O2 therapy with facial mask with 15 l/min. Chest CT findings confirmed pneumomediastine and pneumothorax, which deteriorated the patient" s status. Thereafter tube thorakostomy was performed. There was a clinical and ABG analysis parameters improvement. The patient was discharged 34 days after cesarean delivery with a proper general health.

1.3. Conclusion: Our case highlights even more convincingly the fact that in pregnancy, can be severe to life-threating forms of Covid 19. Pneumothorax and pneumomediastinum are complications that can be encountered even in the late stages of severe forms cases with COVID 19 in pregnancy, Early diagnosis of these complications is essential in adequate management and treatment to avoid fatal outcome.

2. Introduction

COVID-19 is a serious public health emergency and it seems particularly deadly in vulnerable populations. Pregnant women and their fetuses represent a high-risk population during infectious disease outbreaks [1]. Physiological and mechanical changes in pregnancy increase susceptibility to infections in general, particularly when the cardiorespiratory system is affected, and encourage rapid progression to respiratory failure1,10. The first data for Covid 19 in pregnancy showed mild to moderate forms of the disease in this subjects [2,3]. While current data speak of severe forms up to threatening complications for pregnant women diagnosed as having coronavirus disease 2019 [4,5]. Patients who are pregnant may present with atypical features such as the absence of fever as well as leukocytosis [2], while dyspnea and severe back pain are mainly manifestations of its complicated forms. Pneumothorax and pneumomediastine, are rare complications of severe forms of Covid 19 in pregnant women [11,12]. Here we present a case of a severe form ofCOVID-19 in a general pregnant woman compli-

cated with pneumomediastin and pneumothorax in a late stage of disease, during her hospital stay.

3. Case Presentation

A 39year-old multiparous woman was referred to university hospital at 25 weeks of general pregnancy. The patient had a 7-day history of fever, couch, astenia and dyspnea. She tested positive for SARS COV 2 on quantitative real-time polymerase chain reaction. On admission, the patient's respiratory rate 37 breaths/minute, blood pressure 118/62, pulse was 105 beats/minute and temperature 38.9 oC. her saturation O2 (SpO2) was 91% (room air). During episodes of coughing, her oxygen saturation fell to SpO2 88%, but with 6-7 L of oxygen on mask the saturation rose to 95%. We perform a CT scan by applying an abdominal lead shielding to reassure patients of risks of scatter radiation to the fetus. A chest computed tomography (CT) scan revealed bilateral multifocal ground-glass opacities with partial consolidation, corresponding to COVID-19 pneumonia (Figure 1). Laboratory data showed a white blood cell (WBC) count of 4900/μL, lymphocyte 12.4%, C-reactive protein (CRP) 3.3 mg/dL, Feritinemia 4320 ug/ml, D-dimer 2.24 μg/mL (<1.0 μg/mL). We put her immediately under the treatment with dexamethasone 12 mg/day, heparin sodium 10,000 U/day, and Imipenem 3 g/day were initiated. For about 12 hours after admission, the patient was afebrile but her dyspnea worsened. SpO2 was 95% with a 15 L/min oxygen flow through facial mask. Arterial Blood Gas analyze show: PaO2 58%, PaCO2 35%; Sat O2 95%,FiO2/PaO2=155.

In these conditions knowing that delivery might decrease maternal oxygen consumption and improve lung mechanics. In addition, it would be easier to manage the patient's breathing after delivery, an emergency cesarean section was performed under spinal anesthesia, and 2 male infant were delivered with an Apgar score of 6/8

The newborns were intubated and admitted to the neonatal ICU. Remdesivir 200 -100 mg/day and tocilizumab 8 mg/kg, methylprednisolone 1-2mg/kg, were administered, based on national guidelines. The patient's fever subsided, but her SpO2 remained at 94%–95%, even with a 10 L/min oxygen mask on the day after the cesarean section.

The patient's respiratory condition deteriorated, and pneumonia findings on chest CT had worsened, showing rapidly increased consolidation. We put her under noninvasive mechanical ventilation, Continuous positive airway pressure (CPAP), FiO2 50% ,PEEP 6, for 60 min. The patient's respiratory condition quickly improved; she was successfully taken off noninvasive mechanical ventilation the other day,her Arterial Blod Gas analysis improved from p02 56% to pO2 68% (Table 1). Arterial blood gas(ABG) analysis are shown in (Table 1).

After 12 days the patient complains of a severe back pain and her respiratory condition rapidly worsened, reduced saturations up to 80% being under O2 therapy with facial mask with 15l/min. Chest CT findings confirmed pneumothorax (Figure 2), which deteriorated the patient" s status. Thereafter tube thorakostomy was performed. A x-ray was performed before and 4 hour after clamping the test tube, which was removed after 12 days (Figure 3 and figure 4.) One of the infants died 2 weeks after birth, while the other who is about 6 weeks' old continues to be intubated. Nasal swabs for SARS-CoV-2 were negative at 24 and 60 h postpartum. The patient was discharged 34 days after cesarean delivery with a proper general health.

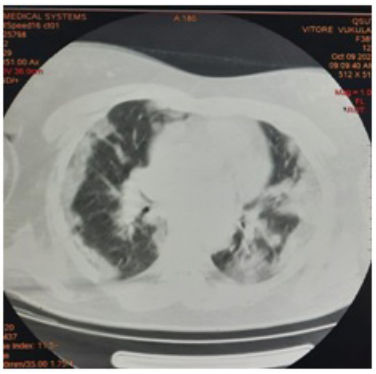

Figure 1: Chest CT scan multifocal ground-glass opacities with partial consolidation

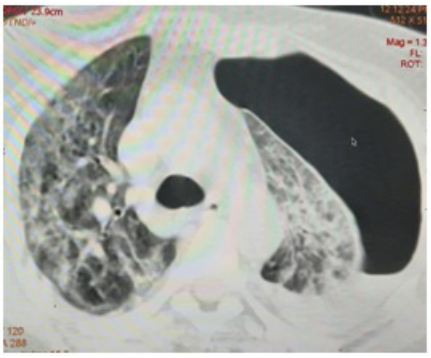

Figure 2: Chest CT findings that confirmed pneumothorax

Figure 3. Chest X-ray findings confirmed

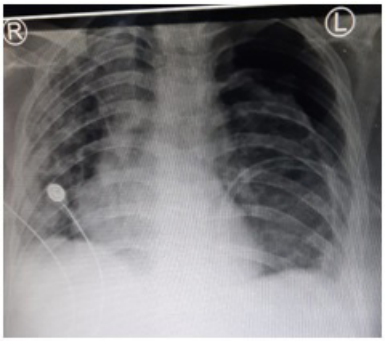

Figure 4: Chest X-ray,after tube pneumothorax thorakostomy was performed

Table 1: Arterial blood gas analysis

ABG	Patient"s ABG on Admission	12 h Before the section ceseres	1 h After the section cesarea	24 h After the section cesarea	48 h After the section Cesarea	12 Day's after the section Cesarea	4 h after Drening	10 Day's after Drening	30 Day's from the begning of the Disease	35 Day's from the begning of the Disease
PH	7,322	7,4	7,46	7,39	7,41	7,43	7,41	7,45	7,47	7,41
PaO2	65.2 mm/Hg	58.6	72.3	56.5	68.4	53.1	62.8	69.4	72	76%
PCO2	38.3 mm/Hg	37.4	35.4	38.3	40.0	38.4	35.1	36.3	34	38%
cHCO3	30 .0 mmol/L	28.2	32.1	31.7	28.2	27.6	33.0	28.5	32	28mmol/L
BE	5,6 mmol/L	4,8	4,5	3,9	2,3	2,4	3,2	2,9	1,9	2,3 mmol/L
SO2	95 %	94	95	80	92	82	90	93	94	94%
	6-7 l/min	15 l/min	15 l/min	under O2therapy 15 l / min. The pacient has to be placed under CPAP FiO2 50% PEEP6 for 60 min	15 l/min	15 l/min Performed chest CT scan which evidenced massive Pnx	12 l/min	10 l/min	5-6 l/min	In the room air

4. Discussion

Pregnant women may be at an increased risk of illness from COVID-19 compared with nonpregnant women. Preexisting comorbidities, high maternal age, and high body mass index seem to be risk factors for severe COVID-19 [5,7]. Our case hadn't preexisting comorbidities, but she had two risk factors (high maternal age, she was 39 years old and her body mass index 32.5 kg/m2), which may explain the severity of disease in this pregnant woman. Rates of preterm birth are higher in pregnant women with COVID-19 than in pregnant women without the disease [5] Maternal deaths due to COVID-19 have been reported in the second or third trimesters [6,15]. Given that our patient was on border between the second and third trimester, which have a high risk of mortality in severe forms of COVID -19, just like our patient had, as well as the fact that this was her fourth pregnancy in a multiparous mother. In these conditions, as the risk was high for both premature birth and maternal mortality, it was decided in a join consultation between infectologists, obsetricians and anesthetists to terminate the pregnancy with a caesarean section under spinal anesthesia. Pregnant women with COVID-19 who experience respiratory failure present multiple management challenges, one of which is the decision to terminate the pregnancy even at a young gestational age where the risk to the fetus is high, as in our case (25 weeks). In severe form of the disease, where the life of mother and consequently of the fetus is threatened, while termination of pregnancy can improve or facilitate respiratory function by reducing decompression, make us think that the decision for caesarean termination of pregnancy in these cases should be made and implemented quickly in time.

When a pregnant woman with COVID 19 desaturates, there are multiple etiopathologies: exacerbation of viral pneumonia, ARDS, overlap of a bacterial pneumonia, systemic inflammatory response syndrome, peripartum cardiomyopathy, viral myocarditis and non-cardiogenic pulmonary edema (hypertensive and non-hypertensive pulmonary edema) . Morbid manifestations of COVID-19 such as severe pneumonia, ARDS, multi-organ dysfunction syndrome (MODS) require advanced ventilator support [1] Especially pulmonary causes of desaturation are more difficult to manage as they may require prolonged mechanical ventilation [2,10]. Knowing the (P-F ratio) which is the ratio between PaO2 and fraction of inspired oxygen (FiO2) is useful in predicting the degree of lung compromise [8] and to determine the severity and the evolutionary stage of the disease thus helping in the selection of adequate pathogen etic and supportive treatment in a timely manner.

Our case had three moments of rapidly desaturations: The first 12 h after hospitalization was associated with high systemic inflammatory response syndrome and exacerbation of viral pneumonia, complicated by severe ARDS in this early acute stage of the disease; The second, deterioration after caesarean delivery, which has been evidenced also by other authors, may be related to re-expansion of the lungs and increased blood volume in the reflux circulation after delivery [9,10]. In our case in the second deterioration we didn't put the patient under mechanical ventilation, instend of it we use noninvasive mechanical ventilation(CPAP),60 minutes' sessions with CPAP, Fi O2 50%, PEEP 6, 5 times a day,5 sessions in total after which we had a significant clinical and laboratory improvement. The third episode of deterioration,12 day after cesarean delivery is associated with the presence of pneumomediastine and pneumothorax,. These are complications that other authors also talk about [11-14]. The data so far on complications such as pneumothorax and pneumomediastine in the same time in COVID 19 in pregnancy are in the form of case reports and moreover we

have not identified any published case of occurrence of both of these complications in the late stage of severe form in these subjects.

5. Conclusion

Our case highlights even more convincingly the fact that in pregnancy, can be severe to life-threating forms of COVID 19, where caesarean delivery is indicated to give the mother and infant the maximum chance of survival. Pneumothorax and pneumomediastinum are complications that can be encountered even in the late stages of severe forms of COVID 19 in pregnant woman. Early diagnosis of these complications is essential in adequate management and treatment to avoid fatal outcome.

References

1. Dashraath P, Wong JLJ, Lim MXK. Coronavirus disease 2019 (COVID-19) pandemic and pregnancy. Am J Obstet Gynecol. 2020; 222(6): 521-531.
2. Ashokka B, Loh M-H, Tan CH, SU LL, Young BE, Lye DC, et al. Care of the Pregnant Woman with COVID-19 in Labor and Delivery: Anesthesia, Emergency cesarean delivery, Differential diagnosis in the acutely ill parturient, Care of the newborn, and Protection of the healthcare personnel. Am J Obstet Gynecol. 2020; 223(1): 66-74.
3. Chen H, Guo J, Wang C. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective 448 review of medical records. Lancet 2020; 395(10226): 809-815.
4. Chen L, Li Q, Zheng D. Clinical characteristics of pregnant women with Covid-19 in Wuhan, China. N Engl J Med. 2020; 382(25): e100.
5. Allotey J, Stallings E, Bonet M. Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis. BMJ. 2020.
6. Hantoushzadeh S, Shamshirsaz AA, Aleyasin A. Maternal death due to COVID-19. Am J Obstet Gynecol. 2020; 223(1): 109.e1-109.e16.
7. Coronavirus (COVID-19) Infection in Pregnancy. RCOG. 2020; Pg no: 460.
8. Zeserson E, Goodgame B, Hess JD. Correlation of venous blood gas and pulse 551 oximetry with arterial blood gas in the undifferentiated critically ill patient. Intensive 552 Care Med. 2018; 33(3): 176-181.
9. Dennis AT, Solnordal CB. Acute pulmonary oedema in pregnant women. Anesthesia. 2012; 67(6): 646-659.
10. Chinen Y, Kinjyo Y, Mekarua K, Kinjoa T. Critical respiratory failure in pregnancy complicated with COVID-19: A case report. Case Reports in Women's Health. 2021; 30: e00309.
11. Metrics P, Rasekhjahromi A, Jafarzadehjahromi Z, Kalani N. Spontaneous pneumothorax in a pregnant woman with COVID-19: A Case Report.
12. Berdai MA, Benlamkadem S, Labib S, Harandou M. Spontaneous Pneumomediastinum in Labor.
13. Akanni BA, Gold I, Nwafor IA, John C. Eze Management of Spontaneous Pneumothorax in Pregnancy in a Low Income Country during COVID 19 Pandemic.
14. Tanrivermis A, Muzaffer S, Onal EM. Spontaneous pneumomediastinum associated with Covid-19 pneumonia in a pregnant woman. Rev Soc Bras Med Trop. 2021; 54: e01852021.
15. Andrikopoulou M, Madden N, Wen T. Symptoms and critical illness among obstetric patients with coronavirus disease 2019 (COVID-19) infection Obstet. Gynecol. 2020; 136(2): 291-299.