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Covid -19 in Pregnant Women

Sharma Ayushi

Department of Community Medicine, JNMC, DMIMS, Wardha (Sawangi), 442004, Maharashtra, INDIA

ABSTRACT –

The WHO declared COVID - 19 as pandemic condition on 30 Jan 2020, which is a major concern for all of us. To ensure the safety of pregnant women and healthcare worker during this pandemic is of utmost importance of her obstetrician as a doctor. Pregnancy is in itself an immunocompromised state as any other disease. There are various physiological changes in a female's body during pregnancy which make her more susceptible to various infections like upper respiratory tract infections (URTIs), urinary tract infections (UTI), breathing difficulties in second trimester as the gravid uterus diaphragm upwards etc. And there are psychological changes also as it is unplanned pregnancy etc. Now which include home isolation, restricted outside movement due to COVID - 19 limited visitors or no visitors at all.

It includes visits to a doctor during pregnancy, maintaining safe social distance in hospital premises and during consulting doctor. If a pregnant woman tests positive for COVID - 19, then becomes a major issue as doctor is dealing with 2 lives here - Mother and her unborn fetus. The reporting of positive case, treatment, and ensuring a positive outcome (safe mother and healthy child) becomes a tough challenge. Taking some preventive measures properly may lead to decrease in the cases of corona infection in pregnancy.

KEYWORDS: WHO, COVID -19, Pandemic, Pregnant woman, Immunocompromised, Infections, Hospital, Treatment

***Corresponding author**

Ayushi Sharma

Medical Intern, Department of Community Medicine, JNMC, DMIMS,
Wardha (Sawangi), 442004, Maharashtra, INDIA

Mob. No. - 7719955154, Email - ayushishrma10@gmail.com

INTRODUCTION -

The COVID – 19^{1,2} disease is caused by Corona Virus also known as SARS – CoV – 2 virus Severe Acute Respiratory Syndrome Corona Virus 2. It is a RNA virus of family Coronaviridae.

Structure of virus : It is an Enveloped virus with nonsegmented positive sense RNA as genetic material. Incubation period of 14 days but may exceed in some patients. It is highly contagious, which is the reason of declaring COVID – 19 as Public Health Emergency. It spreads by droplet infection. Initially person infected with this virus shows symptoms similar to common cold such as sneezing, cough, cold, fever. The condition of patient deteriorates and patient complains of dyspnea (shortness of breath). If the immunity of patient is good enough to fight the virus then patient gets better with the help of supportive treatment, medicines, positive attitude. But the immunity is not that good then they can land up on ventilators, and many patients recover successfully from ventilator also. The pregnant women are susceptible to respiratory infections like severe pneumonia because of physiological changes in body - hemodilution, increased demand of oxygen in uterus and body, increased cardiac output, easy fatigue. So it's important to take preventive measures to avoid getting in contact with people, crowded places to control this COVID outbreak.

MATERIAL AND METHODS

It is an interesting topic of research corona virus in pregnancy and its effects on woman as well as the foetus. So every study has various objective / hypothesis which they tried to prove.

- 1) To find - is there Vertical transmission of COVID – 19 and clinical presentation of pregnant women.
- 2) Is it associated with miscarriages, pre term birth, intrauterine growth restriction
- 3) Preventive measures to be taken to avoid corona in pregnancy

Such as - using mask to cover nose and mouth area, standing at a distance in crowded places.

Sample Collected:

Amniotic fluid samples from patients with COVID-19 pneumonia were obtained through direct needle syringe aspiration at the time of cesarean delivery. Cord blood and neonatal pharyngeal swab samples were collected

Study Design:

This study was reviewed and approved by the Medical Ethics Committee of Zhongnan Hospital of Wuhan University (reference 2020004) and Renmin Hospital of Wuhan University (reference WDRY2020-K015, WDRY2020-K016). For the collection of clinical data, verbal consent from pregnant women was obtained, and written informed consent was waived considering the urgent need to collect data.

Its a review of a study³ done in which the data was collected from their hospital record files . This was done over for three months in which data collected from 25 hospitals for 116 women infected with COVID -19 disease

- Demographics, baseline characteristics, and clinical outcomes of coronavirus disease 2019 infection in pregnant women.⁵
- Clinical characteristics, pregnancy outcomes, and treatment⁶

RESULT

The results were pretty good of the study being conducted – as

- There was no maternal death.
- Most of them presented in their third trimester
- Common symptoms observed and noted in most patients were - fever , cough
- Some of the pregnant women presented without any symptoms and diagnosed with Corona virus disease after testing.
- Cases presented with severe pneumonia were only eight. And were managed efficiently.
- Neonates were tested for severe acute respiratory syndrome corona virus 2 had Negative results.

CONCLUSION

- There's no evidence of vertical transmission of COVID – 19.
- Severe acute respiratory syndrome corona virus 2 during pregnancy is not associated with the increased risk of spontaneous abortion and spontaneous preterm birth .
- Preventive measures if taken properly may reduce the corona in pregnant females.
- Management of the patient in labour depends on the its severity .

DISCUSSION

The COVID – 19 disease is caused by Corona Virus also known as SARS – CoV – 2 virus Severe Acute Respiratory Syndrome Corona Virus 2. It is a RNA virus of family Coronaviridae.

Structure of virus : It is an Enveloped virus with nonsegmented positive sense RNA as genetic material. Incubation period of 14 days but may exceed in some patients. It is highly contagious , which is the reason of declaring COVID – 19 as Public Health Emergency. It spreads by droplet infection , person to person contact . The first case of COVID – 19 pneumonia was reported in Wuhan , China in December 2019.

The virus has ability to mutate and change the structure which is one of reason for its outbreak worldwide. The main target organ of COVID 19 is lungs , when involved leads to respiratory problems , atypical pneumonia , but it also involves other organs as well. The affected lungs shows severe consolidation , and weighs atleast three times heavier than normal lungs , extensive alveolar collapse, and the remaining alveoli were filled with fluid and Alveolar epithelial hyperplasia was evident .

The COVID -19 disease is more severe in some groups - the two extremes of ages that is the children and the elderly people above 60 years of age and immunocompromised patients which also includes Pregnant women. The presence and localization of the virus in the target cells were confirmed by in situ hybridization, EM, and real-time PCR .

During pregnancy body undergoes certain changes which are both physiological as well as immunological , these adaptations are necessary for maintaining tolerance of fetal semi – allograft . This state of transient suppressed immunity is modulated by T cell activity and hence predisposes woman to viral infections .

These changes occur in all systems particularly in respiratory and circulatory systems may worsen the clinical outcomes .

Any viral infection (like – COVID -19 , EBV , CMV) encountered during pregnancy pose for serious consequences for maternal and fetal health.

Depending upon the time / trimester of pregnancy - “ the risk of effects on fetus decreases as the gestational age of fetus increases” .

That means if the viral infection occurs in the third trimester of pregnancy the baby will be born without any disease or effects of viral infection .

The clinical presentation of COVID – 19 in pregnant and non – pregnant females does not differ at all.

Preventive measures ⁴ for COVID – 19 to be followed by Pregnant woman

In this time of pandemic one must take precautions to save their family and their child from getting infected from corona virus . Most important of all is protect your own peace , because if you are not at peace inside then how'll you manage to keep calm and peaceful outside. Pregnancy is a highly hormonal state so women often loses their cool , which is not good for woman as well as her child .

The WHO and CDC ⁷ have given us the guidelines prevention from corona and good , effective counselling for pregnant women.

- 1) Route of transmission of virus is mainly in **respiratory droplets** from person near you so : Cover you nose and mouth area with mask preferably N 95 mask as the virus cannot cross it. Cover your face while sneezing / coughing.
- 2) The virus can travel upto a distance of < 2 mt.
So : keep minimum a distance of 6 feet (< 2 mt) between you and the person next to you . This is known as practicing social distancing
- 3) Since its a virus and can be present in and around you everywhere.
So : its really important to clean the surfaces in your house , work place , which are frequently touched by you and other .
- 4) It also implies on hands because we use hands and touch so many objects , products , gates etc.
So : Wash your hands frequently , the frequency of washing hands is subjective .
- 5) Avoid going out without any cause .
- 6) Avoid crowded places - as less the people around , less the transmission of COVID - 19.
- 7) Consult doctor whenever you feel
- 8) Use Tellymedicine in this COVID time .

- 9) Check temperature daily and consult doctor if any symptom such as cough, shortness of breath experiences.
- 10) Women with COVID – 19 symptoms should be isolated from other members of the house.
- 11) Same applies to persons with travel history whether it be women / men.
- 12) Home quarantine them at least for 14 days.
- 13) Make sure you get fresh food, enough sleep and perform exercises as it calms the mind and makes you more peaceful person. And boosts immunity.
- 14) Mothers who are suspected and confirmed cases for COVID – 19 are kept under observation, not allowed to breastfeed the baby.
- 15) As such there's no evidence which proves transmission of virus in baby via breast milk.
- 16) Pregnant women should regularly check their vitals - temperature, pulse rate, respiratory rate and if possible keep charting of vitals for every day.
- 17) If anything feels unusual, get check up by your doctor and get admitted in a good well equipped hospital setup.
- 18) All these should be remembered and practiced during pregnancy and afterwards also.

MANAGEMENT OF COVID – 19 PATIENT IN PREGNANCY :

This is dealing in a hospital setup, The COVID – 19 confirmed patient kept in an isolation ward which are especially for corona patients. Mental health of woman should also be kept in mind as it can be a depressing situation for her which may have an effect on fetus as well. Suspected cases are also kept separated from normal patients.

The hospital should have sufficient equipped health facilities and well trained clinicians for effective management of emergencies and taking care of critically ill obstetric patients.

Pregnant women are Categorized in following disease types for better treatment :

- Mild type (i.e., symptomatic with stable vital signs).
- Severe type (i.e., respiratory rate $\geq 30/\text{min}$, oxygen concentration $\leq 300 \text{ mmHg}$).
- Critical type (i.e., shock with organ failure, respiratory failure requiring mechanical ventilation)

Therefore , prioritizing the pregnant women are important to give the proper care which they particularly require.

Treatment of COVID – 19 in pregnant women :

The treatment of COVID – 19 patients was just the supportive treatment , then it is thought to try antiviral drugs , anti malarial drugs for treatment as well as drug prophylaxis . Drugs such as - Hydroxychloroquine was used prophylactically by many healthcare professionals.

Doctor and the patients should maintain a basic personal hygiene. Treatment of pregnant woman depends on her condition.

Here can be **two scenarios :**

1) Pregnant woman with 34 weeks (say) of gestation - confirmed COVID – 19 case. Here plan of action will be to extend the pregnancy as much as possible , and stop going into more respiratory distress. So I will give patient supportive treatment and facilitate oxygen for breathing.

Give Dexamethasone 2 doses 12 mg 12 hrs apart - helps in fetal lung maturation , and if patient delivers - child will be safe as it will have fully matured lungs .

Here the neonate will be taken under observation for 2 weeks.

We are not giving drugs which are specially for corona as it can be teratogenic.

We can give drugs in third trimester as the fetus is full formed , brain is completely formed , fetus is big enough , only effect will occur on birth. weight of fetus.

This teratogenicity of drug matters a lot when given in first or second trimester of pregnancy. Because – fetus is forming. Organogenesis will happen in first trimester and gets mature by end of second trimester.

2) Emergency case - Term Patient in labor - unknown COVID – 19 status. Here I will first confirm the COVID – 19 status of patient with kits available

If COVID – 19 positive status - then Prepare for an emergency LSCS (lower segment uterine section) with following proper surgical guidelines for performing operation on these patients.

After wearing PPE (personal protective equipments) such as. - gown , gloves , N 95 mask , eye goggles , face shield , shoe cover etc. in minimal time , then. LSCS will be done so as save lives of mother and fetus.

Here the neonate will be taken under observation for 2 weeks to see if it develops any symptoms. COVID -19 or be perfectly fine.

BREASTFEEDING:

Breastfeeding⁸ protects newborns from getting sick and also helps protect them throughout their infancy and childhood.

Breastfeeding is particularly effective against infectious diseases because it strengthens the immune system by directly transferring antibodies from the mother. As with all confirmed or suspected COVID-19 cases, mothers with any symptoms who are breastfeeding or practicing skin-to-skin contact should take precautions.

There's no evidence of vertical transmission of COVID-19 virus .

- Wash hands properly and regularly, before & after breastfeeding the baby.
- Clean the nipple & areola surface with tissue regularly.
- Practice respiratory hygiene, including during feeding. If you have respiratory symptoms such as being short of breath, use a medical mask when near your child.
- Expressed breast milk can also be used for feeding if mother is severely ill.
- Enable mothers and infants to remain together and practice skin-to-skin contact, and rooming-in throughout the day and night, especially straight after birth during establishment of breastfeeding, whether or not the mother or child has suspected, probable, or confirmed COVID-19.
- Counselling and psychosocial support is also important in this time.
- Initiate breastfeeding within 1 hour of the birth.
- Continue exclusive breastfeeding for 6 months, then introduce adequate and safe complementary foods at age 6 months.

Continue breastfeeding up to 2 years of age or beyond. Researchers around the globe are in search of drugs and vaccines for COVID – 19 treatment. One such drug is Favipiravir.

Favipiravir

- First Oral drug India has approved for treating corona patients.
- It is reserved drug for only emergency use and in patients with mild to moderate corona symptoms.
- It has biological half life estimated 2 - 5.5 hours (range)
- Mechanism of action : It selectively inhibits RNA polymerase and prevents replication of viral genome.
- Favipiravir is a known Teratogenic drug. Hence , to be avoided in pregnancy.

Role of corticosteroids in treatment of COVID – 19 patients

- As we know, we give corticosteroid - Dexamethasone 24 mg total in pregnancy if we suspect preterm labor. It results in early lung maturation of fetus by forming surfactant .
- A study showing results in treating COVID – 19 patients with corticosteroids -
- Dexamethasone 6 mg daily for 10 days
- Significantly Reduced deaths of severely sick COVID -19 patients
- Cheap drug and easily availability
- Trial shows surprisingly convincing results - Says - Martin Landray of University of Oxford. (non – pregnant patients)

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CONFLICTS OF INTERESTS

There is no conflict of events with these topics .

REFERENCES

1. WHO Rolling Updates on COVID – 19 - <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>.
2. Huang C. Wang Y. Li X. et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020; 395: 497-506. <https://pubmed.ncbi.nlm.nih.gov/31986264/>.
3. Jie Yan, MD, PhD 1 , Juanjuan Guo, MD 1 , Cuifang Fan, MD 1 , Yuanzhen Zhang, MD , etc., Original research obstetrics, Coronavirus disease 2019 in pregnant women: a report based on 116 cases, July 01, 2020; 223(1): 111.e1-111.e14. [https://www.ajog.org/article/S0002-9378\(20\)30462-2/fulltext](https://www.ajog.org/article/S0002-9378(20)30462-2/fulltext).
4. Sumaira Omer, Salamat Ali, and Zaheer ud Din Babar, Preventive measures and management of COVID-19 in pregnancy. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7143201/>
5. Demographics, baseline characteristics, and clinical outcomes of coronavirus disease 2019 infection in pregnant women. <https://www.ajog.org/action/showFullTableHTML?isHtml=true&tableId=tbl1&pii=S0002-9378%2820%2930462-2>.
6. Supplemental Table Clinical characteristics, pregnancy outcomes, and treatment for severe cases. <https://www.ajog.org/action/showFullTableHTML?isHtml=true&tableId=tblS1&pii=S0002-9378%2820%2930462-2>.
7. Centers for Disease Control and Prevention. Interim infection prevention and control recommendations for patients with suspected or confirmed coronavirus disease 2019 (COVID-19)

- in healthcare settings. <https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?>.
8. WHO updates on Breastfeeding in COVID-19 patients. <http://www.emro.who.int/nutrition/nutrition-infocus/breastfeeding-advice-during-covid-19-outbreak.html>
 9. Article about details of drug Favipiravir. <https://pubchem.ncbi.nlm.nih.gov/compound/Favipiravir>
 10. <https://www.sciencemag.org/news/2020/06/cheap-steroid-first-drug-shown-reduce-death-covid-19-patients>.
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