Case study

A CASE REPORT ON SEVERE ACUTE RESPIRATORY INFECTION (SARI)

ABSTRACT

Introduction: Severe acute respiratory infection (SARIs) is the rapidly progressive respiratory illness which may be due to the pathogens that have potentials for large scale epidemics. MERSCOV AND H7N9 (Avian influenza) has been described by SARIs. The causative organism of a SARI yet not being identified or it cannot be easily established. SARIs increases morbidity and mortality which is associated with the COVID -19. COVID-19 can be complicated by severe acute respiratory infection (SARIs) and may often cause multisystem involvement is encountered. SARIs patients had mandatory needs of intensive care unit hospitalization and mechanical ventilation.

Main Symptoms and/or Important Clinical Findings: A 50 years old admitted in A.V.B.R.H. with chief complaints of cold, cough (dry, non-productive, non-bloody), vomiting, loose stool, breathlessness since 3 days. After undergone certain investigationlike complete blood test, HRCT, ECG and diagnosed as SARI and shifted to Intensive care unit.

The Main Diagnoses, Therapeutic Interventions, and Outcomes: A 50 years old female with Severe acute respiratory infection(SARI) with chief complaints ofcold, cough (dry, non-productive, non-bloody), vomiting, loose stool, breathlessness, the doctors manage her initially withantibiotic, steroids, vitamin C, multivitamin and anticoagulant and adequate nursing management. Nursing Perspectives: The nursing interventions initiated for managing present case aremonitor the vital sign i.e. blood pressure, pulse, respiration, temperature, maintain oxygen level and intake output. BIPAP site observed and ensure that the patients is comfortable. Patient assessed for GCS, Glucose level and sign of cyanosis, monitoring theESR, D-DIMER, RT PCR, FERRITINother investigations like HRCT.

Conclusion: In the Present case the patient of 50 year old female withsevere acute respiratory infection (SARI) it has been managed with the therapeutic treatment, right now the patient condition is worsen.

KEY WORDS: HRCT, SARI, Steroids

INTRODUCTION

Severe acute respiratory infection (SARIs) is the rapidly progressive respiratory illness which may be due to the pathogens that have potentials for large scale epidemics. MERSCOV AND H7N9 (Avian influenza) has been described by SARIs.[1] The causative organism of a SARI yet not being identified or it cannot be easily established. SARIs increases morbidity and mortality which is associated with the COVID -19. COVID-19 can be complicated by severe acute respiratory infection (SARIs) and may often cause multisystem involvement is encountered. SARIs patients had mandatory needs of intensive care unit hospitalization and mechanical ventilation.[2] Organ failure that is life-threatening as a result of a dysregulated host response to a suspected or verified infection, with organ malfunction. Patients with SARI should get supplement oxygen treatment as soon.[3] Use of cautious fluid management in SARI patients. Patients with SARI should be treated cautiously with intravenous fluids when there is no indication of shock, because vigorous fluid resuscitation may impair oxygenation. Treat all probable infections causing SARI with an empiric antibacterial.[4]

PATIENT INFORMATION

PATIENT PRESENT HISTORY: A 50 years of old female presented with the chief complaints of cold, cough (dry, non-productive, non-bloody) vomiting, loose stool, breathlessness since 3 days. On examination she was oriented, conscious, and SPO2 was 90% to 93%. She was on BIPAP and high flow oxygen mask intermittently as she was not maintaining saturation.

PAST HISTORY: No any past history of fever or contact with suspected patients of COVID or any travelling history.

CAUSES: The major causative agent is Avian influenza (eg. H7N9 or H5NI), MERS-COV, acute respiratory infection, Pneumococcal, Adenovirus.

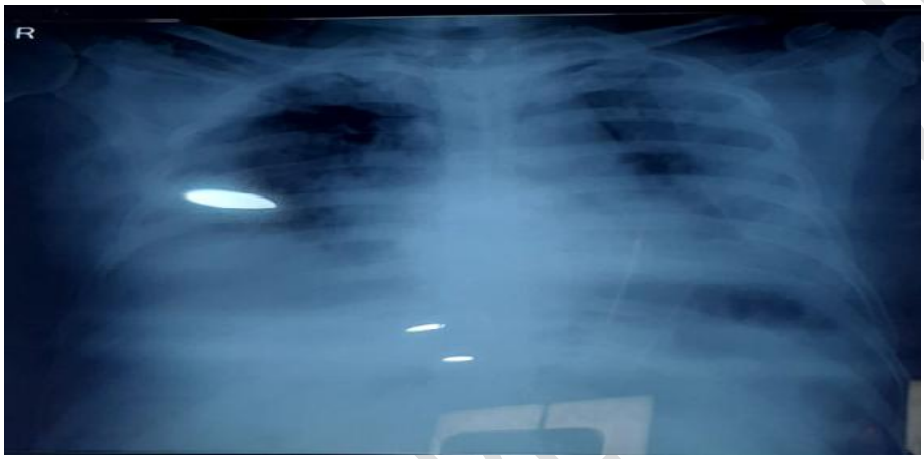
CLINICAL FINDING: Cold, cough (dry, non-productive, non-bloody), vomiting, loose stool, breathlessness, worsening of respiratory symptoms are the serious symptoms which can leads to serious complication.

DIAGNOSTIC EVALUATION

1. History Collection-Done.

2. Physical examination- Done

3. X-ray chest–Done



4. HRCT thorax- Done (score -20/25)

5. RTPCR –Negative

6. Others: CBC, KFT, LFT, ESR, D-DIMER, RT PCR, FERRITIN, RBS, CRP

Investigation	Patient value	Normal value	Justification
Complete blood count			
1. Hb%	10.7 gm%	13-15.	Decreased
2. MCV	93 cub. Micron	80-90cub.micron	Increased
3. MCH	29.5pico-gm	26.5-33.5pico-gm	Normal
4. Total RBC count	4.2 million/cu.mm	4.5-6 million/cu.mm	Normal
5. Total WBC count	15,000 cu.mm	4000-11000 cu.mm	Increased
6. Total platelet count	1.12 lacs/cu.mm	1.5-4 lacs/cu.mm	Increased
7. RDW	13.7%	10-15%	Normal

KFT 1. Urea 2. Creatinine 3. Sodium 4. Potassium	 58 mg% 0.5 mg% 144 meq/l 5.1 meq/l	 18-40mg% 0.7-1.5 mg% 136-145meq/l 3-5 meq/l	 Increased Decreased Normal Increased
LFT 1. Total protein 2. Albumin 3. Total bilirubin 4. Bilirubin conjugated	 4.29 gm% 2.73 gm% 1.06mg/dl 0.33 mg/dl	 6.8 gm% 3-5 gm% 0.3-1mg/dl 1-3 mg/dl	 Normal Normal Increased Decreased
CRP	33.1	0-10 mg/l	Increased
D-dimer	4.74	0-0.4 mcg/ml	Increased
FERRITIN	582.4mmHg	80-100mmHg	Increased
ESR	62 mm/ 1sthr	1-10 mm/1sthr	Increased

MEDICAL MANAGEMENT:

She was kept under observation in the intensive care unit and treatment given like,

DRUG	Mechanism of action	Dose /route	Indication	Contraindication
Inj Remdesivir (antiviral)	It acts as nucleoside analog that inhibits RdRp also acts as antiviral that target coronavirus replication.	200mg stat/IV and 100mg OD for 4days,	Coronavirus	Neonates Adults and Paediatric with severe renal impairment
Inj. Meropenem (antibiotic)	It is broad spectrum carbapenem antibiotic. It penetrates bacterial cell and interfere vital cell wall component that leads to cell	1gm /IV / TDS	Bacterial, meningitis, Intra-abdominal infection,	Seizures, diarrhoea, decreased blood platelets, CKD

	death.		Skin structure infection.	
Inj. Lomoh (anticoagulant)	It prevents formation of blood clots and prevents blockage in blood vessels by activating certain blood clotting proteins.	0.4ml subcutaneous OD	Deep vein thrombosis, pulmonary embolism	Hypersensitive
Inj.Dexamethasone	It act as a steroids.	6mg OD /IV	Inflammatory condition Autoimmune condition	Diabetic Low thyroid hormone Untreated TB
Inj. Doxycycline	It inhibits bacterial protein synthesis as prevent bacterial infection.	100mg/BD/IV	Respiratory infection Urinary tract infection	Porphyria Myasthenia gravis Liver disease
Inj Pan (antacid)	It inhibits the final step in gastric acid production.	40 mg/IV OD	Heartburn, acidity	Interstitial nephritis, systemic lupus erythematosus, inadequate Vit B12
Inj. Emset (antiemetic)	It inhibits serotonin.	4mg /IV TDS	Nausea, vomiting	Hypersensitive Client taking apomorphine.
syp Grilinctus	It acts on the brain cough center as inhibits prostaglandins.	10ml/ TDS/oral	Cough Throat irritation	hypersensitivity
SypZincovit (multivitamin)	It improves body's immune function due to presence of selenium.	10ml/ TDS/oral	Nutritional supplement	hypersensitivity
Nebulization with duolin and budecort 4th hourly.				

NURSING MANAGEMENT:

Nurses have an inevitable role in caring and most importantly giving education to patients. The key lies in treating the underlying condition. Negligence is the way to conditions like these, leading to even death of the patient. Nurses need to understand the magnitude of the disease and give adequate teaching regarding the safety precaution.

Look for indications of respiratory exhaustion, such as shortness of breath and impaired cough.

As required, perform active, passive, and isotonic range of motion exercises.

Keep records of intake and output data to identify negative balance.

NURSING DIAGNOSIS

- Ineffective breathing pattern related to hypoxia as evidenced by shortness of breath.

Strictly monitoring of oxygen saturation

Provide prop up position

Administer oxygen support as per physician order

- Impaired physical mobility related to neuromuscular impairment as evidenced by decreased muscle strength.

Perform active range of motion to all joints two times a day.

Maintain skin integrity.

- Anxiety related to change in health status and threat to self-concept as evidenced by expression of helplessness.

Encourage for relaxation therapy

Provide information prior to every procedure

PROGNOSIS: The ability to restore a normal immune status is the most important prognostic factor. If it is not possible, the prognosis is uniformly dismal. Prognosis can be improve if immunocompetence can be restored**.** As the patient is not responding to the treatment, prognosis depends on patient response of treatment.

CONTINUING CARE: A referral to the home care may be suggested for a hospitalized patient depending upon the physical condition of the patient and the availability of family assistance. The patients with SARIs had impaired physical stamina and blindness which need home transfer assistance after hospitalization. The home care nurse's assessment of the home's physical environment is important. Suggestions to adapt the home environment to meet limitation of the patient's activity are significant.[5]

DISCUSSION:

Discussion on Severe acute respiratory infections (SARI) from influenza in adult patients: the experience of a sentinel hospital.

A study conducted in whichthey discovered that a total of 221 individuals were hospitalised with influenza-related SARI during the research period.91.4 percent of the participants in this research had risk factors for problems, and 34.3 percent had been vaccinated during the most recent campaign.The most common clinical manifestation was pneumonia, which occurred in 57.0 percent of the group; other symptoms included influenza-like illness, aggravated chronicbronchitis, decompensated heart failure, and asthmatic crisis. A multivariate study revealed four significant predictors of in-hospital mortality: 1) Confidence interval for being bedridden 2) Admission to the intensive care unit 3) A Pa02/Fi02 ratio of 250; and 4) a rise in serum creatinine concentration. The influenza vaccination was found to be a major protective factor.The study revealed that influenza-associated SARI primarily impacted older individuals with pre-existing diseases.The majority of patients progressed to respiratory failure, and more than a quarter required critical care beds.Death was linked to host features and disease-related circumstances, and the vaccination proved effective. The virus kind had no effect on the outcome.[6]

Discussion on Learning from the Past: Possible Urgent Prevention and Treatment Options for Severe Acute Respiratory Infections Caused by 2019-nCoV

With the current trajectory of the 2019-nCoV outbreak unknown, public health and medicinal measures will both be needed to contain spreading of the virus and to optimize patient outcomes. Although little is known about the virus, an examination of the genome sequence shows strong homology with its better-studied cousin, SARS-CoV. The spike protein used for host cell infection shows key nonsynonymous mutations that might hamper the efficacy of previously developed therapeutics but remains a viable target for the development of biologics and macrocyclic peptides. Other key drug targets, including RNA-dependent RNA polymerase and coronavirus main proteinase (3CLpro), share a strikingly high (>95 %) homology to SARS-CoV. Herein, they suggest four potential drug candidates (an ACE2-based peptide, remdesivir, 3CLpro-1 and a novel vinylsulfone protease inhibitor) that could be used to treat patients suffering with the 2019-nCoV. The study also reveals previous efforts into drugging these targets and hope to help in the development of broad-spectrum anti-coronaviral agents for future epidemics.**[7]**

Discussion on viral etiology of severe acute respiratory infections in hospitalized children

Severe acute respiratory illness (SARI) is recognized as an important cause of morbidity, mortality, and hospitalization among children in developing countries. Little is known, however, in tropical countries about the cause and seasonality of respiratory infections, especially in hospitalized settings. The objective were study investigates the viral etiology and seasonality of SARI in hospitalized children The method used was Prospective clinic surveillance to identify hospitalized children aged ≤15 years presenting with respiratory symptoms ≤5-day duration. The result from September 2011 through September 2013, 347 children aged ≤15 years were enrolled. At least one virus was identified in each of 65·4% children, of which 29·5% were coinfections; 27·3% were positive for human adenovirus (hAdV), 13·2% for human respiratory syncytial virus (hRSV), 11·5% for rhinovirus/enterovirus (RV/EV), 10·6% for human bocavirus (hBoV), 9·8% for influenza virus (Inf), 6·6% for human parainfluenza virus (hPIV), 5·7% for human coronavirus (hCoV), and 2·3% for human metapneumovirus (hMPV). While hRSV showed seasonal patterns, hAdV and RV/EV were detected throughout the year and no evident temporal patterns were observed for the remaining viruses. The study conclude that Respiratory viruses were associated with a high burden of hospitalizations among children. Nevertheless, additional studies evaluating asymptomatic[8]

STRENGTH: The Female patient of 50 years old not tolerating all the medication and not having better response around 1 month to the therapeutic treatment of the hospital which has been given.

CONSENT AND ETHICAL APPROVAL: As per international standard or university standard guideline patients consent and ethical approval has been collected and preserved by the authors.

CONCLUSION: Present case the patient of 50 year old female with severe acute respiratory infection and their symptoms such as cough, breathlessness now patient's condition is worsen. SARI should be treated with caution. Detected early with the help of investigation to determine the cause in the symptoms. Severe acute respiratory infection (SARIs) is a potentially fatal disease in which the lungs do not supply adequate oxygen to the rest of the body.(9) SARI may strike persons of any age. It has the potential to become a very significant present health concern.Caring for SARI patients is not so easy. It is a very difficult for critical care nurses.[10]

REFERENCE:

1. Rev1602-07.pdf [Internet]. [cited 2021 Sep 23]. Available from: https://professionals.wrha.mb.ca/old/extranet/ipc/files/manuals/acutecare/Rev1602-07.pdf

2. InterimGuidance_ClinicalManagement_NovelCoronavirus_11Feb13u.pdf [Internet]. [cited 2021 Sep 24]. Available from: https://www.who.int/csr/disease/coronavirus_infections/InterimGuidance_ClinicalManagement_NovelCoronavirus_11Feb13u.pdf

3. Respiratory Support in COVID-19 Patients, with a Focus on Resource-Limited Settings [Internet]. [cited 2021 Sep 24]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7253105/

4. 96997299691580715786.pdf [Internet]. [cited 2021 Sep 24]. Available from: https://ncdc.gov.in/WriteReadData/l892s/96997299691580715786.pdf

5. Guidelines for Environmental Infection Control in Health-Care Facilities: (545922006-001) [Internet]. American Psychological Association; 2003 [cited 2021 Sep 24]. Available from: http://doi.apa.org/get-pe-doi.cfm?doi=10.1037/e545922006-001

6. Fica A, Sotomayor V, Fasce R, Dabanch J, Soto A, Charpentier P, et al. Severe acute respiratory infections (SARI) from influenza in adult patients in Chile: the experience of a sentinel hospital. Rev Panam Salud Pública. 2019 Jan 25;43:e1.

7. Morse JS, Lalonde T, Xu S, Liu WR. Learning from the Past: Possible Urgent Prevention and Treatment Options for Severe Acute Respiratory Infections Caused by 2019-nCoV. Chembiochem. 2020 Mar 2;21(5):730–8.

8. Kenmoe S, Tchendjou P, Vernet M-A, Moyo-Tetang S, Mossus T, Njankouo-Ripa M, et al. Viral etiology of severe acute respiratory infections in hospitalized children in Cameroon, 2011–2013. Influenza Other Respir Viruses. 2016;10(5):386–93.

9. Severe Acute Respiratory Syndrome (SARS) [Internet]. [cited 2021 Sep 24]. Available from: https://www.who.int/health-topics/severe-acute-respiratory-syndrome

10. World Health Organization. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected. Interim guidance. Pediatr Med Rodz. 2020 May 20;16(1):9–26.