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Department of Pharmacy Practice

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A REVIEW ON MIDDLE EAST RESPIRATORY SYNDROME

Malona Lilly Philip* and Jestin Joseph#

Background

The Middle East Respiratory Syndrome (MERS) is a viral respiratory disease caused by MERS- Corona Virus (MERS-CoV). Corona viruses are species in the genera of virus belonging to one of two subfamilies Coronavirinae and Torovirinae in the family Coronaviridae. Coronaviruses are a large family of viruses that can cause diseases ranging from the common cold to Severe Acute Respiratory Syndrome (SARS). MERS-CoV or EMC/2012 is a single stranded RNA virus of the genus Betacoronavirus. The virus was first reported in the year 2012 in Saudi Arabia. The name "corona virus" is derived from the Latin corona, meaning crown or halo. It is different from any other coronaviruses that was found in people before.[1,2]

Epidemiology:

The virus appears to be circulating throughout the Arabian Peninsula, primarily in Saudi Arabia, where the majority of cases (>85%) have been reported since 2012. Several cases have been reported outside the Middle East. Most of these infections are believed to have been acquired in the Middle East, and then exported outside the region. Since September 2012, WHO has been notified of 1,864 laboratory-confirmed cases of infection with MERS-CoV, 659 deaths related to MERS-CoV, 54% are males, 27 countries have reported cases of MERS-CoV.[1]

Etiology

People with pre-existing medical conditions are more likely to be infected with MERS-CoV. Pre-existing conditions like diabetes, cancer, chronic lung disease, chronic heart disease and chronic kidney disease.[1,3]

Transmission

Non-human to human transmission: The route of transmission from animals to humans is not fully understood, but camels are likely to be a major reservoir host for MERS-CoV and an animal source of infection in humans. Strains of MERS-CoV that are identical to human strains have been isolated from camels in several countries, including Egypt, Oman, Qatar, and Saudi Arabia.[2]

Human-to-human transmission: MERS-CoV can spread from an infected person's respiratory secretion through coughing. It can also spread when ill people have close contact such as caring for or living with an infected person.[3]

Incubation Period

When a person is exposed to MERS-CoV, the symptom can usually start from 5 or 6 days but the range can be from 2-14 days.[1]

Symptoms and Complications

The typical symptoms of MERS-CoV infection had acute respiratory illness with fever, cough and shortness of breath. Some people experience gastrointestinal symptoms like nausea, vomiting and diarrhea. More severe complication can lead to pneumonia and kidney failure.[4]

Laboratory tests

Molecular tests: It is used to diagnose active infection by real-time reverse transcription polymerase chain reaction (rRT-PCR), collection of lower specimen like bronchoalveolar lavage, sputum and tracheal aspirates and upper specimen like nasopharyngeal and oropharyngeal swabs, serum and stool specimens. [1,4]

Serology tests: It is used to detect previous infection enzyme linked immune sorbent assay (ELISA), immunofluorescent assay (IFA) and microneutralisation assay. [1,4]

Prevention

Prevention measures include[1,3,4]:

- Wash the hands often with soap and water for 20 seconds for both adults and children. If it is no available use, alcohol based hand sanitizer.
- Caregivers of patients who are not hospitalized should wear facemask.
- Cover your nose and mouth with tissue when you cough or sneeze and dispose in the trash.
- Avoid touching eyes, nose and mouth with unwashed hands.
- Avoid personal contact with sick people.
- Clean and disinfect frequently touched surfaces and objects.

Treatment [1-4]

- Middle East Respiratory Syndrome is caused by similar virus as SARS (Severe Acute Respiratory Syndrome) virus so the management of MERS-CoV has followed from 2002 SARS outbreak.
- The Middle East Respiratory Syndrome requires O2 supplementation.
- In severe cases of Middle East Respiratory Syndrome, requires mechanical ventilation and admission into intensive care unit (ICU).
- The treatment is based on patient's medical condition.
- Supportive treatments with hydration, antipyretics, analgesics, respiratory support and antibiotics.
- Mycophenolic acid is potent in in-vitro activity against MERS-CoV and is used as monotherapy.
- Ribavirin and interferon alpha have synergistic in-vitro effects but its role remains unknown
- Lopinavir is also used in treating Middle East Respiratory Syndrome.

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A REVIEW ON GUILLAIN-BARRE SYNDROME

Neethu Saj*

Background

Guillain-Barre syndrome (GBS) is a rare illness in which a person's immune system attacks the peripheral nerves. The immune system produces proteins called antibodies that normally attack harmful foreign substances, such as bacteria and viruses. Guillain-Barre occurs when the immune system mistakenly makes antibodies that attack the healthy nerves of the nervous system. Individuals of all ages can be affected, but it is more common in adults and men. Weakness and tingling in the body extremities are usually the first symptoms. These sensations can quickly spread, eventually paralyzing the whole body.[1,2]

Causes

Guillain-Barre syndrome is often pave the way by an infection such as the stomach flu, cytomegalovirus, which is a strain of the herpes virus, Epstein-Barr virus infection or mononucleosis, mycoplasma pneumonia and HIV or AIDS. It may also triggered by vaccine administration or surgery. Zika virus infection is a trigger of Guillain-Barre syndrome.[2,3]

Symptoms

Symptoms typically few weeks, with most individuals recovering without long-term, severe neurological complications. [1,2]

- The first symptoms include weakness or tingling sensations. They usually start in legs, and can spread to the arms and face.
- For some people, these symptoms can lead to paralysis of the legs, arms, or muscles in the face.
- In 30% of people, the chest muscles are affected, making it hard to breathe.
- Severe lower back pain
- Loss of bladder control
- Fast heart rate
- Difficulty in moving eyes or face, talking, chewing, or swallowing

Diagnosis

Diagnosis based on symptoms and findings on neurological examination including diminished or loss of deep-tendon reflexes. A lumbar puncture may be done for supportive information, though should not delay treatment.[2,3]

- Electromyography
- Nerve Conduction Tests
- Electrolyte levels and Liver function tests
- Creatinine phosphokinase level

Complications of Guillain-Barre Syndrome

Guillain-Barre affects your nerves. The weakness and paralysis that occurs can affect multiple parts of your body. Complications may include difficulty breathing when the paralysis or weakness spreads to muscles that control breathing. Complications can also include[1]

- Lingering weakness, numbness, or other odd sensations even after recovery
- Heart or blood pressure problems
- Pain

- Slow bowel or bladder function
- Blood clots and bedsores due to paralysis

Treatment and Care

The goal of treatment is to reduce the severity of symptoms and keep the body functioning while the nervous system recovers. The following are recommendations for treatment and care of people with Guillain-Barre syndrome.[2,3]

- The patients should be hospitalized so that they can monitored closely.
- Supportive care including monitoring of breathing, heartbeat and blood pressure. In cases where a patient's ability to breath is impaired, usually put on ventilator.
- There is no known cure for Guillain-Barre syndrome. Nevertheless, treatments can help to improve the symptoms of GBS and shorten its duration.
- Given the autoimmune nature of the disease, its acute phase is typically treated with Plasmapheresis (Plasma Exchange) or Intravenous Immunoglobulin.

Plasmapheresis: It is intended to remove the antibodies attacking the nerves from the blood. During this procedure, blood is removed from the body by a machine. This machine removes the antibodies from the blood and then returns the blood to the body.[3]

Intravenous Immunoglobulin: High doses of immunoglobulin can also help to block the antibodies causing Guillain-Barre. Immunoglobulin contains normal, healthy antibodies from donors.[3]

- Plasmapheresis and intravenous immunoglobulin are equally effective.
- In case where muscle weakness persists after the acute phase of the illness, patients may require rehabilitation services to strengthen their muscles and restore movement.

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CAN NON-STEROIDAL ANTI-INFLAMMATORY DRUGS CAUSE HEART FAILURE?

Dr. Rovin M. Theempalangad*

Heart failure constitutes an increasing public health problem because of the growing incidence and prevalence, poor prognosis and high hospital (re)admission rates. Myocardial infarction is the underlying cause in the majority of patients, followed by hypertension, valvular heart disease and idiopathic cardiomyopathy.[1] Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), which inhibit the enzymes cyclo-oxygenase (COX) 1 and 2, have been associated with the occurrence of symptoms of heart failure in several case reports and quantitative studies, mainly in patients with a history of cardiovascular disease or left ventricular impairment.[1]

A nested case control study, which was done to investigate the cardiovascular safety of NSAIDs and estimate the risk of hospital admission for heart failure with use of individual NSAIDs. The participants were enrolled from five population based healthcare databases from four European countries (the Netherlands, Italy, Germany, and the United Kingdom). The study results suggest that the use of any NSAID (use in preceding 14 days) was found to be associated with a 19% increase of risk of hospital admission for heart failure (adjusted odds ratio 1.19; 95% confidence interval 1.17 to 1.22), compared with past use of any NSAIDs (use >183 days in the past). Risk of admission for heart failure increased for seven traditional NSAIDs (Diclofenac, Ibuprofen, Indomethacin, Ketorolac, Naproxen, Nimesulide and Piroxicam) and two COX 2 inhibitors (Etoricoxib and Rofecoxib). Odds ratios ranged from 1.16 (95% confidence interval 1.07 to 1.27) for Naproxen to 1.83 (1.66 to 2.02) for Ketorolac. Risk of heart failure doubled for Diclofenac, Etoricoxib, Indomethacin, Piroxicam, and Rofecoxib used at very high doses (2 defined daily dose equivalents), although some confidence intervals were wide. Even medium doses (0.9-1.2 defined daily dose equivalents) of Indomethacin and Etoricoxib were associated with increased risk. There was no evidence that celecoxib increased the risk of admission for heart failure at commonly used doses. The study concluded that the risk of hospital admission for heart failure associated with current use of NSAIDs appears to vary between individual NSAIDs, and this effect is dose dependent.[2] This information could help the clinicians to take the necessary preventive steps while prescribing NSAIDs.

References

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TENOFOVIR ALAFENAMIDE FOR THE TREATMENT OF CHRONIC HEPATITIS B

Dr. Uday Venkat Mateti*

Tenofovir Alafenamide has been approved by the US food and drug administration in month of November 2016 for the treatment of chronic hepatitis B virus (HBV) infection in adults with compensated liver disease. It is a hepatitis B virus nucleoside analog reverse transcriptase inhibitor.[1]

Mechanism of action

Tenofovir Alafenamide is a phosphonamidate prodrug of Tenofovir. Tenofovir Alafenamide as a lipophilic cell-permeant compound enters primary hepatocytes by passive diffusion and by the hepatic uptake transporters OATP1B1 and OATP1B3. Tenofovir Alafenamide is then converted to tenofovir through hydrolysis primarily by carboxylesterase 1 (CES1) in primary hepatocytes. Intracellular tenofovir is subsequently phosphorylated by cellular kinases to the pharmacologically active metabolite tenofovir diphosphate. Tenofovir diphosphate inhibits HBV replication through incorporation into viral DNA by the HBV reverse transcriptase, which results in DNA chain-termination.[1]

Dosage and administration

Tenofovir Alafenamide is available in tablet. The recommended dosage of Tenofovir Alafenamide is 25 mg orally once daily with food.[1,2]

Monitoring parameters

- Prior to initiation of Tenofovir Alafenamide, patients should be tested for HIV-1 infection. Tenofovir Alafenamide alone should not be used in patients with HIV infection.
- Prior to initiation of Tenofovir Alafenamide, patients should be tested for renal and hepatic functions.[3]

Side effects

The most common side effects include headache, abdominal pain, fatigue, cough, nausea and back pain.[1,2]

Contraindications

- Tenofovir Alafenamide is not recommended in patients with estimated creatinine clearance below 15 ml per minute.
- Tenofovir Alafenamide is not recommended in patients with decompensated (Child-Pugh B or C) hepatic impairment[3]

References

1. http://www.centerwatch.com/drug-information/fda-approved-drugs/drug/100175/vemlidy-tenofovir-alafenamide. (Last accessed on 30th December, 2016)
2. http://www.gilead.com/~/media/files/pdfs/medicines/liver-disease/vemlidy/vemlidy_pi.pdf?la=en. (Last accessed on 30th December, 2016)
3. http://www.gilead.com/~/media/files/pdfs/medicines/liver-disease/vemlidy/vemlidy_patient_pi.pdf?la=en. (Last accessed on 30th December, 2016)

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NEW DRUGS APPROVED BY USA FOOD AND DRUG ADMINISTRATION (FDA)

(OCTOBER – DECEMBER 2016)

Dr. Uday Venkat Mateti*

Specialty	Drug Name	Brand Name	Company Name	Uses	Approved (Month, Year)
Dermatology	(Crisaborole) Ointment	Eucrisa	Pfizer	Treatment of atopic dermatitis	December 2016
Endocrinology	Insulin Glargine and Lixisenatide Injection	Soliqua 100/33	Sanofi Aventis	Treatment of inadequately controlled type II diabetes	November 2016
	Insulin Degludec and Liraglutide injection	Xultophy 100/3.6	Novo Nordisk	Treatment of inadequately controlled type II diabetes	November 2016
Hepatology (Liver, Pancreatic, Gall Bladder)	Tenofovir Alafenamide	Vemlidy	Gilead Sciences	Treatment of chronic hepatitis B	November 2016
Obstetrics/ Gynecology (Women's Health)	Prasterone vaginal insert	Intrarosa	Endoceutics	Treatment of moderate to severe dyspareunia, a symptom of vulvar and vaginal atrophy, due to menopause	November 2016
Oncology	Nivolumab	Opdivo	Bristol-Myers Squibb	Treatment of recurrent or metastatic squamous cell carcinoma of the head and neck	November 2016
	Olaratumab	Lartruvo	Eli Lilly	Treatment of soft tissue sarcoma	October 2016
Gastroenterology	Bezlotoxumab	Zinplava	Merck	Treatment of recurrent Clostridium difficile infection in patients receiving antibacterial treatment	October 2016
Neurology	Carbamazepine	Carnexiv	Lundbeck	Replacement therapy when oral administration is not feasible, in adults with seizures	October 2016

Reference: http://www.centerwatch.com/drug-information/fda-approved-drugs/. (Last accessed on 31st December, 2016)

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NEW DRUGS APPROVED BY CENTRAL DRUGS STANDARD CONTROL ORGANIZATION (CDSCO), India
(OCTOBER – DECEMBER 2016)

Dr. Uday Venkat Mateti*

Drug Name	Strength	Indication	Date of issue
Azilsartan Medoxomil	Bulk & 40mg/80mg Tablets	Treatment of hypertension in adults patients, either alone or in combination with other antihypertensive agents.	09th December 2016
Perampanel	2mg/4mg/6mg/8mg/10mg/12mg Tablets	The adjunctive treatment of partial-onset seizures with or without secondarily generalized seizures in patients with epilepsy aged 12 years and older.	2nd December 2016
Lenvatinib	4mg/10mg Hard Gelatin Capsules (Lenvatinib Mesylate)	Treatment of patients with locally recurrent or metastatic, progressive, radioactive iodine-refractory differentiated thyroid cancer	2nd December 2016
Alcaftadine	Eye Drops 0.25% w/v & Bulk	Prevention of itching associated with allergic conjunctivitis in patients between the age group 10 to 60 years.	21st November 2016

Reference: http://www.cdsco.nic.in/forms/list.aspx?lid=2034&Id=11. (Last accessed on 31st, December, 2016)

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DEPARTMENT OF PHARMACY PRACTICE NEWS

DOCTOR OF PHILOSOPHY (Ph.D) AWARDS

1. Mr. Javedh Shareef, Asst. Professor, Dept. of Pharmacy Practice, NGSMIPS has been awarded Doctor of Philosophy (Ph.D.) in Pharmaceutical Sciences in recognition of his research work entitled "Impact of Clinical Pharmacist Interventions in Diabetes Mellitus Disease Management Program in a Tertiary Care Teaching Hospital" by Nitte University, Mangaluru.

2. Mr. Rajesh K.S., Asst. Professor, Dept. of Pharmacy Practice, NGSMIPS has been awarded Doctor of Philosophy (Ph.D.) in Pharmaceutical Sciences in recognition of his research work entitled "Study on Antivenom Property of Root Extract of Coix Lachrymajobi for the Treatment of Indian Poisonous Snake Venoms" by Nitte University, Mangaluru.

INVITED TALKS

1. Dr. Uday Venkat Mateti, Dept. of Pharmacy Practice, NGSMIPS, Nitte University delivered a talk on the topic entitled "Evidence Based Pharmacy Practice" in the AICTE sponsored Quality Improvement Program (QIP) on the theme "Formulation and Management of Quality Medicines" held from the 12th – 24th September 2016 as Speaker on 23rd September 2016 at Manipal College of Pharmaceutical Sciences, Manipal University, Manipal.

2. Dr. Uday Venkat Mateti Dept. of Pharmacy Practice, NGSMIPS, Nitte University delivered a talk as Speaker on the topic entitled "Evidence-Based Decision-Making in Health Outcomes Research" in the 1st International Conference on Health Economics and Outcomes Research held on 14th December 2016 at Manipal University, Manipal.

SEMINARS/WORKSHOPS/CMEs

1. The Department of Pharmacy Practice faculty members Dr. Rajesh KS, Mr. Bharath Raj K and Dr. Rovin M Theempalangad participated as a Delegate in the One Day Seminar on "Perspectives on New Drug Discovery" conducted by the Dept. of Pharmaceutical Chemistry, NGSMIPS held on 3rd November 2016 at Paneer Campus, Deralakatte, Mangaluru..

2. The Department of Pharmacy Practice faculty members Dr. Uday Venkat Mateti, Dr. Rovin MT, Dr. Juno J. Joel and Dr. Javedh S has participated as a Delegate in the workshop on "Forensic Psychiatry" conducted by the Dept. of Psychiatry, K.S. Hegde Medical Academy, held on 25th November 2016 at Justice K. S. Hegde Charitable Hospital, Deralakatte, Mangaluru.

3. The Department of Pharmacy Practice faculty members Dr. Uday Venkat Mateti, Dr. Rovin MT and Dr. Juno J. Joel participated as a Delegate in the CME on the "KSHEMA Rheumatology Update" held on 17th December 2016 at Justice K. S. Hegde Charitable Hospital, Deralakatte, Mangaluru.

THE TRAINING ARENA

K.S.Hegde Charitable Hospital

Department of Pharmacy Practice

Drug Information Center

Out Patient Dispensing Counter

Dispensing and Retail Pharmacy

Ward Round Participation with Physicians

Library and Case Presentation Facility

Nitte Institutions

Health Science Institutions, Hospitals and Research Centres

1. K.S. Hegde Medical Academy, Mangaluru
2. A.B. Shetty Memorial Institute of Dental Sciences, Mangaluru
3. Nitte Gulabi Shetty Memorial Institute of Pharmaceutical Sciences, Mangaluru
4. Nitte Usha Institute of Nursing Sciences, Mangaluru
5. Nitte Institute of Physiotherapy, Mangaluru
6. Nitte Institute of Medical Laboratory Sciences, Mangaluru
7. Nitte Institute of Speech and Hearing, Mangaluru
8. Justice K. S. Hegde Charitable Hospital, Mangaluru
9. Nitte Meenakshi Institute of Craniofacial Surgery, Mangaluru
10. Leela Narayana Shetty Memorial Cancer Institute, Mangaluru
11. Nitte-Gajria Hospital, Karkala
12. Kshema-IVF: Fertillity & Reproductive Medicine Centre, Mangaluru
13. Nitte Rural Psychiatry Centre, Nitte.
14. Kowdoor Gopal Hegde & Smt. Manorama Hegde Hospital, Bailur.
15. Nitte University Centre for Science Education & Research (NUCSER), Mangaluru
16. Nitte University Centre for Animal Research & Experimentation (NUCARE), Mangaluru
17. Nitte University Centre for Stemcell Research & Regenerative Medicine (NUCSReM), Mangaluru

Engineering Institutions

18. Nitte Mahalinga Adyanthaya Memorial Institute of Technology, Nitte
19. Nitte Meenakshi Institute of Technology, Bengaluru
20. Nitte Institute of Architecture, Mangaluru

Management Institutions

21. Justice K. S. Hegde Institute of Management (Dept. of Management Studies, NMAMIT, Nitte), Nitte
22. Nitte School of Management, Bengaluru
23. Sarosh Institute of Hotel Administration, Mangaluru
24. Nitte Institute of Banking & Finance, Mangaluru
25. Nitte Institute Communication, Mangaluru

Technical Instituions

26. Nitte Rukmini Adyanthaya Memorial Polytechnic, Nitte
27. Mulki Ramakrishna Punja Industrial Training Institute, Thokur

Science and Commerce Institutions

28. Dr. Nitte Shankara Adyanthaya Memorial First Grade College, Nitte
29. Dr. Nitte Shankara Adyanthaya Memorial First Grade College, Bengaluru
30. Dr. Nitte Shankara Adyanthaya Memorial Pre-University College, Nitte
31. Dr. Nitte Shankara Adyanthaya Memorial Pre-University College, Mangaluru
32. Dr. Nitte Shankara Adyanthaya Memorial Pre-University College, Bengaluru

Schools

33. Dr. Nitte Shankara Adyanthaya Memorial Senior Secondary School, Nitte
34. Dr. Mundkur Ramanna Shetty Memorial English Medium High School, Thokur
35. Nitte International School, Bengaluru
36. Dr. Nitte Shankara Adyanthaya Memorial Higher Primary School, Bolakodi

Satellite Health Centres:

Bailur | Bellikoth | Bengre | Dabbekatte | Farangipet | Hejamadikodi | Kadri | Karkala | Mangalagangothri | Madikeri | Mukka | Mulki | Mundkur | Nada | Nitte | Sasihithlu | Sringeri | Subrahmanya | Thalipadi