

Letter to the Editor

MERS-CoV: An Emerging Public Health Threat

¹Danasekaran, R., Annadurai, K., ¹Mani, G., and ²Ramasamy, J.

¹Assistant Professor, Department of Community Medicine, Shri Sathya Sai Medical College & Research Institute, Kancheepuram district, Tamil Nadu

² Professor, Department of Community Medicine, Shri Sathya Sai Medical College & Research Institute, Kancheepuram district, Tamil Nadu.

Correspondence:

Raja Danasekaran,
Department of Community Medicine,
Shri Sathya Sai Medical College & Research Institute,
Kancheepuram district, Tamil Nadu, India- 603108.
Contact Number: +91-9994215405
Email id: mailraja84@gmail.com

Dear editor,

Middle East Respiratory Syndrome Corona Virus (MERS - CoV) was first reported in September 2012 by Egyptian virologist Dr. Zakki in Saudi Arabia.¹ The virus was first isolated from the lungs of a 60 year old male patient with acute pneumonia and acute renal failure.² It is the sixth new type of corona virus similar to SARS virus and was initially referred to as the SARS like virus or simply the novel corona virus.³

Globally, from September 2012 to the end of July 2013, WHO has reported a total of 94 laboratory-confirmed cases of infection with MERS-CoV, including 46 deaths. Maximal number of cases were from Saudi Arabia (74) and 2-3 cases were reported each from Tunisia, Qatar, UK, UAE, France, Italy and Jordan. Health care workers in Saudi Arabia were screened and 7 were identified to have infection with MERS Co-V. Among them 2 were asymptomatic and 5 had mild upper respiratory symptoms.⁴

MERS Co-V infection may result in renal failure and acute pneumonia which often have a fatal outcome (Fatality rate- 49%). The virus has a strong affinity towards non-ciliated bronchial epithelial cells and it was found that dipeptidyl peptidase4 (DPP4) acts as a functional receptor for the virus. The amino acid sequence of DPP4 is unique to each species and is expressed in the bronchial and renal epithelial cells, which explains the involvement of kidney & lungs in the disease.⁵

Studies are being done to know the natural reservoir for the infection. MERS Co-V showed similar sequences as of bat and porcine corona viruses. In particular a bat corona virus carried by the genus Pipstrellus differed from the MERS Co-V by only 1.8%.⁶ Other study has reported that 100% of camels from Oman had protein specific antibodies against MERS Co-V. Most of the Middle East countries consume a large amount of camel meat and there is a possibility that bats harboring the virus may transmit the infection to camels.⁷

Outbreaks of MERS CO-V infection have been reported in several hospitals in Saudi Arabia, which confirms the human-human transmission of the disease. Patients with diabetes and renal failure are found to be especially at high risk of getting infected. It was also found that the incubation period of the disease to be 5.2 days. Although human transmission has been proved, the ability of the MERS Co-V infection resulting in an epidemic is under debate. But corona viruses are notorious for adaptation to new hosts as in the case of SARS outbreak which resulted in 800 of deaths.⁸

Either sub clinical or asymptomatic infections among healthcare workers will be a huge threat, since they may become the source of infection for patients with co-existing diseases.⁴ Several highly sensitive real time reverse transcriptase polymerase chain reactions (RT-PCR) assays are available to confirm the MERS Co-V infection from samples like broncho alveolar lavage or sputum.⁹ Vaccine based on spike protein have been under clinical trials.¹⁰

At the present situation World Health Organization (WHO) has advised the member states to have a strong surveillance against severe acute respiratory infections (SARI) and review any unusual disease occurrence. Recent travelers from Middle East who have symptoms of SARI should be tested for MERS Co-V infection. And among immune compromised, even atypical symptoms like diarrhea should be investigated for MERS Co-V infection. Healthcare facilities should take precautions when treating suspected or diagnosed patients, so as to prevent spread to other patients, healthcare workers and visitors.¹¹

References

1. De Groot RJ, et al. Middle East Respiratory Syndrome Coronavirus (MERS-CoV): Announcement of the Coronavirus Study Group. *Journal of Virology*. doi:10.1128/JVI.01244-13.
2. Ali Mohamed Zaki, Sander van Boheemen, Theo M Bestebroer, Albert D M E Osterhaus and Ron A M Fouchier . Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. *New England Journal of Medicine* 367: 1814. doi:10.1056/NEJMoa1211721.
3. Saey, Tina Hesman . Scientists race to understand deadly new virus: SARS-like infection causes severe illness, but may not spread quickly. *Science News*2013; 6: 5.
4. Ziad A. Memish, Alimuddin I. Zumla, Abdullah Assiri. Middle East Respiratory Syndrome Coronavirus Infections in Health Care Workers. *New England Journal of Medicine*. doi: 10.1056/NEJMc1308698
5. Raj VS, Mou H, Smits SL, et al. Dipeptidyl peptidase 4 is a functional receptor for the emerging human coronavirus-EMC. *Nature* 2013;495:251-4.
6. Augustina Annan; Heather J. Baldwin; Victor Max Corman (March 2013). "Human Betacoronavirus 2c EMC/2012–related Viruses in Bats, Ghana and Europe". *Emerging Infectious Disease journal - CDC* 19 (3). Retrieved 14 August 2013.
7. Reusken et.al. Middle East respiratory syndrome coronavirus neutralising serum antibodies in dromedary camels: a comparative serological study. *Lancet (Elsevier Ltd)* 2013. doi:10.1016.2FS1473-3099.2813.2970164-6
8. Stanley Perlman, Paul B McCray. Person-to-Person Spread of the MERS Corona virus -An Evolving Picture. *N Engl J Med* 2013; 369: 466-67.
9. Corman, V. M.; Müller, M. A.; Costabel, U.; Timm, J.; Binger, T.; Meyer, B.; Kreher, P.; Lattwein, E. et al. Assays for laboratory confirmation of novel human coronavirus (hCoV-EMC) infections". *Eurosurveillance*, 2012; 49: 20334.
10. Parrish, R. (7 June 2013). Novavax creates MERS-CoV vaccine candidate. *Vaccine News*. Retrieved on 14 August 2013.
11. Middle East respiratory syndrome (MERS) — interim guidance for health professionals. Atlanta: Centers for Disease Control and Prevention. Available at <http://www.cdc.gov/coronavirus/mers/interim-guidance.html>

Contributions: RD manuscript writing; KA and JR manuscript reviewing

Conflicts of interest: The authors declare no potential conflicts of interest.



This work is licensed under
a Creative Commons Attribution