

Management of Patient Flow in Vascular and Interventional Radiology During MERS-CoV Outbreak



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ABSTRACT

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In 2015, an outbreak of Middle East respiratory syndrome coronavirus occurred in Saudi Arabia and necessitated special measures to be implemented to control the spread of the virus. In this article, we will discuss how the outbreak was managed in the vascular and interventional radiology (VIR) suite in a large tertiary care hospital in Saudi Arabia. Various measures were taken to reduce the risk of transmission of infection. Unit-level education played an important role in the care of patients. A hospital-wide educational program was implemented to ensure zero transmission of infection. Special attention was made to monitor staff who acquired the virus. VIR suite was able to handle the situation and control the outbreak.

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Introduction

Middle East respiratory syndrome coronavirus (MERS-CoV) is a viral respiratory disease caused by novel coronavirus. The World Health Organization's (WHO) current understanding is that it is a zoonotic virus that has entered the human population. However, the reason that human cases were first detected only in 2012 is unknown, and the specific exposures resulting in and modes of transmission from animals to humans have not been fully elucidated (MERS, n.d.).

The clinical spectrum of MERS-CoV infection ranges from no symptoms (asymptomatic) or mild respiratory symptoms to severe acute respiratory disease and death. A typical presentation of the disease is fever, cough, and shortness of breath. Pneumonia is a common finding but not always present. Gastrointestinal symptoms, including diarrhea, have also been reported (MERS-CoV, n.d., 2015).

The disease was first identified in 2012 resulting in nine cases worldwide, five of which came from Saudi Arabia, but the massive epidemic occurred in the year 2015, which recorded 1,368 cases, 75% (1,037 cases) from Saudi Arabia (WHO, 2015).

Between August 1, 2015 and October 15, 2015, 136 new MERS-CoV cases were diagnosed in the institution, 43 of them were health care workers, and of 60 vascular and interventional radiology (VIR) staff, only one member was diagnosed and without sequela recovered after home isolation.

As of October 16, 2016, there are 1,427 total confirmed cases with 32 asymptomatic, three cases still under treatment, 845 cases

recovered, and 611 cases passed away since 2012 (Ministry of Health Saudi Arabia-Statistics, 2016).

Purpose

The purpose of this article is to discuss how we managed the patient flow in the VIR section during the MERS-CoV outbreak to reduce the risk of transmission of infection.

Methods used to control spread

Limit of Patient Flow

From the last week of August 2015 to the beginning of October 2015, all elective inpatient and outpatient procedures were postponed. Only emergent and life-threatening cases were scheduled.

A checklist prepared by the infection prevention and control department was used as criteria for suspecting MERS-CoV (Figure 1).

- Patient name and medical record number were placed in the checklist for tracking purposes.
- Checklists were kept in the unit as a hardcopy file.

All patients who came from the emergency room needing intervention were considered and placed under MERS-CoV precautions, and because there is no negative pressure room in the unit, they were placed last on the list and sent directly inside the VIR room on arrival to the department. No HEPA filters were used,

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<p>Medical Imaging Checklist for Respiratory Symptoms</p> <p>Epidemiological Risk</p> <p><input type="checkbox"/> Contact with MERS-Cov confirmed or probable case</p> <p><input type="checkbox"/> NGHHA admission or ER visit within the last 14 days</p> <p>Clinical Symptoms</p> <p><input type="checkbox"/> Cough</p> <p><input type="checkbox"/> SOB</p> <p><input type="checkbox"/> Sore throat and/or runny nose</p> <p><input type="checkbox"/> Headache</p> <p><input type="checkbox"/> Diarrhea and body aches</p> <p><input type="checkbox"/> Fever and at least ONE of the points above</p>

Figure 1. This is the respiratory checklist used for vascular and interventional radiology outpatients for screening. MERS-Cov = Middle East respiratory syndrome coronavirus; NGHHA = National Guard Health Affairs; ER = emergency room; SOB = shortness of breath.

but instead, the team who took care of these patients followed the proper donning and doffing intended.

Work shifts

The VIR team was divided into two shifts. Interventional radiologists, nurses, special procedure technologists, and patient care technicians, alternately working to minimize staff exposure. Contact tracing for the positive MERS-CoV patients was an important part of management, and the nurse manager was in communication with the infection control department daily.

Staff who came in contact with patients inside the facility, probable and/or confirmed cases with or without symptoms, were directly sent for swabbing in the Employee Health Clinic.

Unit-Level Education

To ensure staff safety, daily education and reiteration of the important preventative points were done.

<p>DONNING of PPE</p> <p>Before entering the room</p> <p>1. Perform hand hygiene (Allow hands to fully dry before doing the next step)</p> <p>2. Don fluid-resistant unsterile long sleeved gown (Should fully cover torso from neck to knee and should be secured at neck and waist)</p> <p>3. Put on a fit tested seal checked N95 mask or PAPR</p> <p>4. Put on eye protection (goggles or face shield)</p> <p>5. Put on gloves (Allow to extend over isolation gown)</p>
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Figure 2. The steps for donning personal protective equipments. PAPR = powered air-purifying respirator.

<p>DOFFING of PPE</p> <p>Before leaving the room</p> <p>1. Remove gloves</p> <p>2. Perform hand hygiene</p> <p>3. Remove goggles or face shield</p> <p>4. Remove isolation gown (Unfasten ties and peel gown away from the neck and shoulder, turn it inside out, fold into a bundle and discard)</p> <p>5. Perform hand hygiene</p> <p>6. Immediately after leaving the room, remove N95 mask or PAPR (Hold the band without touching the front side)</p> <p>7. Perform hand hygiene</p>

Figure 3. The steps for doffing personal protective equipments. PAPR = powered air-purifying respirator.

Hand Hygiene

As hand hygiene is the most effective and simplest way to prevent the spread of infections in the hospital, we wanted to ensure that staff were knowledgeable and well trained on the technique of the five moments of hand hygiene, which are before patient contact, after patient contact, before aseptic task, after handling bodily fluids, and after contact with patient’s surroundings (National

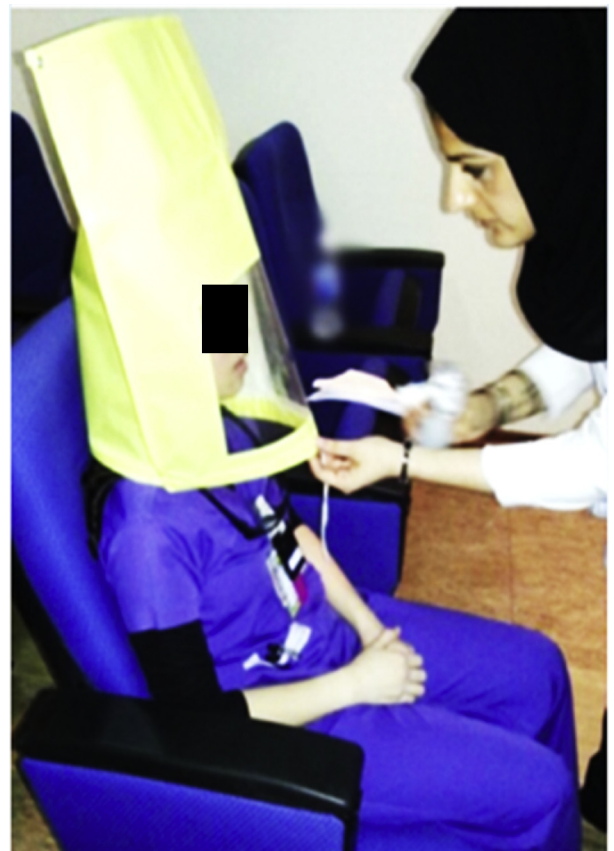


Figure 4. A picture during fit testing for the N95 mask.

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