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FACTORS ASSOCIATED WITH TRANSMISSION OF MIDDLE EAST RESPIRATORY SYNDROME AMONG KOREAN HEALTHCARE WORKERS: INFECTION CONTROL VIA EXTENDED HEALTHCARE CONTACT MANAGEMENT IN A SECONDARY OUTBREAK HOSPITAL

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Background and Aims: The risk factors for infection and mode of transmission for Middle East respiratory syndrome coronavirus (MERS-CoV) are unknown. During May and June 2015, a large MERS-CoV outbreak occurred in Korea.

Methods: We performed a case-control cohort analysis to identify the risk factors for transmission in a secondary outbreak hospital. Healthcare contacts were assigned to hospital isolation or home isolation.

Results: We evaluate all individuals in the hospital isolation cohort (n = 66; 40 inpatients and 26 healthcare workers [HCWs]) and HCWs in the home quarantine cohort who directly contacted the index case (n = 14). One HCW was confirmed to be infected with MERS-CoV and 4 HCWs were identified as probable cases. All HCW cases (confirmed or probable) visited the index case in his hospital room. When we compared the HCW cases and controls, the only significant risk factor for transmission was the index patient coughing at contact (100% vs. 30.4%, p = 0.008). There were no other significant differences between the two groups, including contact duration, number of contacts, and medical activities.

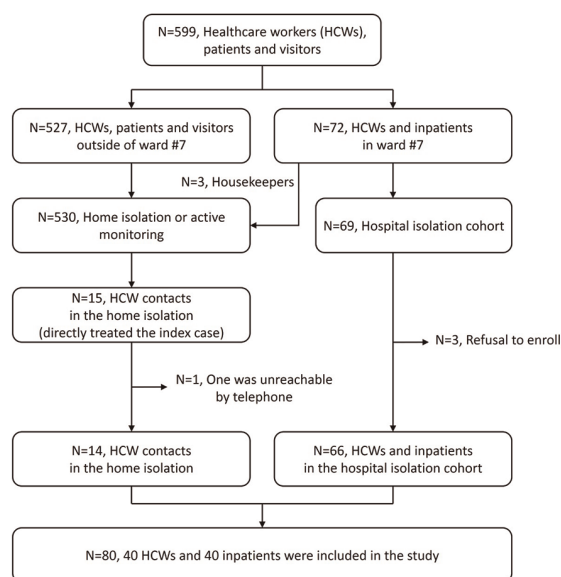


Figure 1 A flow chart of the patients and their quarantine groups.

Table. Factors associated with transmission of MERS to healthcare workers, by acquisition status.

Variables	Confirmed or probable cases n = 5	Negative controls n = 35	Total n = 40	p-value	OR	95% CI
Mode of contact						
Saw (viewed) the index case	5 (100)	23 (65.7)	28 (70.0)	0.298	---	---
Entered the index case's room	5 (100)	16 (45.7)	21 (52.5)	---	---	---
Outpatient clinic area	0 (0)	7 (20.0)	7 (17.5)	---	---	---
Contact only with specimen	0 (0)	2 (5.7)	2 (5.0)	1.000	---	---
No memory about contact history	0 (0)	10 (28.6)	10 (25.0)	0.306	---	---
Contact duration (n=28)						
Minimal contact number per day	2.2 ± 1.3	1.9 ± 0.8	1.9 ± 0.9	0.487	---	---
Contact days	2.0 ± 0.7	2.3 ± 1.2	2.2 ± 1.1	0.471	---	---
Total number of contact	4.4 ± 3.5	4.5 ± 3.5	4.5 ± 3.4	0.944	---	---
The longest exposure time, min	3.2 ± 3.9	5.8 ± 8.1	5.3 ± 7.6	0.500	---	---
Total exposure time, min	9.6 ± 11.9	12.8 ± 10.7	12.2 ± 10.8	0.555	---	---
Protection while contact (n=28)						
Surgical mask	3/5 (60.0)	21/23 (91.3)	24/28 (85.7)	0.07	0.14	0.01-1.43
Goggles	0 (0)	0 (0)	0 (0)	---	---	---
Gloves	0 (0)	2/23 (8.7)	2/28 (7.1)	1.000	---	---
Procedures of exposure (n=28)						
Touched the index case	3/5 (60.0)	14/23 (60.9)	17/28 (60.7)	1.000	0.96	0.13-6.95
Touched the front	3/5 (60.0)	12/23 (52.2)	15/28 (53.6)	1.000	1.38	0.19-9.83
Distance from index case, < 2 meters	5/5 (100)	20/23 (87.0)	25/28 (89.3)	1.000	---	---
Talked with the index case	4/5 (80.0)	13/23 (56.5)	17/28 (60.7)	0.619	3.01	0.30-31.9
Taking temperature	3/5 (60.0)	9/23 (39.1)	12/28 (42.9)	0.624	2.33	0.32-16.8
Checking blood pressure	1/5 (20.0)	7/23 (30.4)	8/28 (28.6)	1.000	0.57	0.05-6.08
Venipuncture or venous access	1/5 (20.0)	6/23 (26.1)	7/28 (25.0)	1.000	0.71	0.07-7.66
Intravenous infusion by IV line	1/5 (20.0)	9/23 (39.1)	10/28 (35.7)	0.626	0.39	0.04-4.06
Cleaning the bedding	0 (0)	4/23 (17.4)	4/28 (14.3)	1.000	---	---
Index case coughing during contact	5/5 (100)	7/23 (30.4)	12/28 (42.9)	0.008	---	---
Hand washing after contact	3/6 (60.0)	12/23 (52.2)	15/28 (53.6)	1.000	1.38	0.19-9.83

Figure 2 Factors associated with transmission of MERS to healthcare workers, by acquisition status.

Conclusions: The MERS-CoV can be transmitted via minimal contact in healthcare facilities. Therefore, we recommend early extended contact management, which may successfully reduce infection and prevent inter-hospital transmission.

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PULMONARY MUCORMYCOSIS: A CASE REPORT

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Background and Aims: Mucormycosis is an opportunistic fungal infection that occurs in immunocompromised host. Rhinocerebral infection is the most common form and usually occurs in poorly controlled diabetes patients especially who with diabetic ketoacidosis. Pulmonary mucormycosis, however, is a rare clinical presentation.

Methods

Results: This study reported a 62-year-old male teacher living in Chaiyaphum Province, presented with subacute fever, 10 kgs weight-loss and non-massive hemoptysis. He did not have symptoms of sinusitis. His underlying disease is a well-controlled diabetes mellitus, which is recently diagnosed for 6 months and no history of diabetic ketoacidosis. Physical examination revealed high-grade fever and bronchial breath sound with increased vocal resonance at left upper lung. Chest radiograph showed dense consolidation at left upper lung. The initial investigations were leukocytosis, normal blood sugar, no organisms on sputum Gram's stain and AFB smear. His melioid titer was 1:40. CT chest revealed area of consolidation at anterior segment of left upper lung and round-shaped hypodense lesion within the consolidation. He underwent bronchoscopy and transbronchial lung biopsy. The specimen showed broad non-septate hyphae with perpendicular branching. Pulmonary mucormycosis was diagnosed and treated with amphotericin B and followed by posaconazole. After 9 months of antifungal therapy, patient's symptoms improved but left upper lung lesion still persisted. Left upper lobe lobectomy was done.

Conclusions: Then pulmonary mucormycosis should be concern in diabetic patients even though well controlled blood sugar. Patients with diabetes, the course may be more subacute than hematologic malignancy and organ transplant patients. The treatment is combination of anti-fungal therapy and surgical removal.

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PREVALENCE AND RISK FACTORS OF VIRAL INFECTION IN HOSPITALIZED PATIENTS WITH ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Background and Aims: To detect the virus using Polymerase Chain Reaction (PCR) technology in the hospitalized patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD) and investigate prevalence of viral infection and the risk factors for AECOPD.

Methods: We did a retrospective investigation of patients with AECOPD from May 2012 to May 2015, collected patient's basic information, clinical data and length of hospital stay, and analysis the virus epidemiology by using PCR. A logistic regression analysis was performed to investigate the risk factors.

Results: 127 patients with AECOPD were included in this study. 52 episodes (40.94%) yielded positive viral PCR results, only one virus infection 36 episodes (28.34%), mixed infection 16 episodes (12.60%). AECOPD patients with a viral infection were associated with longer hospital stay (11.5 ± 0.96 vs 8.99 ± 0.42, P = 0.000). Multiple regression analysis showed that smoking (P = 0.029), diabetes (P = 0.001), respiratory failure (P = 0.049), frequency of exacerbations in previous year (P = 0.028) were the risk factors.

Conclusions: Prevalence of respiratory viral infections was high in hospitalized patients with AECOPD. The length of hospital stay was longer in AECOPD patients from who a virus was isolated. Smoking, diabetes, respiratory failure, and frequency of exacerbations in previous year were the risk factors of a viral infection. Early identification of these risk factors may help reduce the incidence of AECOPD.