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Katsurada, Naoko

Nishimura, Yoshihiro

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Viral pneumonia: which patients should we focus on?

Naoko Katsurada and Yoshihiro Nishimura

Affiliations: Division of Respiratory Medicine, Department of Internal Medicine, Kobe University Graduate School of Medicine

Corresponding author: Naoko Katsurada

Division of Respiratory Medicine, Department of Internal Medicine,

Kobe University Graduate School of Medicine

7-5-1 Kusunoki-cho, Chuo-ku, Kobe, Japan, 650-0017

Tel: +81-78-382-5660 Fax: +81-78-382-5661

E-mail: nk1208@med.kobe-u.ac.p

Respiratory viruses are a common cause of community-acquired pneumonia (CAP). According to a recently published systematic review and meta-analysis, 24.5% of CAP patients had some form of viral infection, with influenza virus, rhinovirus, and respiratory syncytial virus being the most prevalent [1]. In this issue of Infectious Diseases, Youn-Jung Kim *et al.* retrospectively investigated the characteristics and the mortality of adult patients with viral pneumonia. The authors showed that older age, viral–bacterial coinfection, underlying malignancy and shock at the initial presentation were associated with increased mortality. The overall 30-day mortality was 7.1%, with parainfluenza and coronavirus infections leading to significantly higher mortality in cancer patients compared to non-cancer patients. Conducting such a study was necessary due to limited data being available to describe the mortality associated with each type of virus effectively in patient groups affected by pneumonia. Due to the complex nature of viral pneumonia, each virus may affect the clinical course of the disease differently, depending on the type of patient studied [2]. Most respiratory viruses cause self-limiting upper respiratory diseases in immunocompetent patients. However, certain groups of patients progress to develop severe disease [3]. It is therefore of the utmost importance to identify both the patient groups at risk and the viruses most commonly implicated. The majority of previous studies on respiratory viruses focused on patients with hematological

malignancies or individuals receiving hematopoietic cell transplantation (HCT). Morbidity and mortality data from patients with solid tumors, suffering from respiratory viral infection, are limited [4]. Furthermore, data supporting the recent guidelines for the management and treatment of community-acquired respiratory viral infections in cancer patients were largely derived from patients undergoing allogeneic HCT [4]. One previous report, describing the 2009/H1N1 influenza viral infections in immunosuppressed patients with solid tumors revealed a relatively high rate of pneumonia (23%) and death (9.5%) [5]. In that particular study, the authors stratified patient groups by the degree of immunosuppression (e.g. the presence of leukocytopenia and neutropenia or the use of immunosuppressive therapy) [5]. In the current study, cancer was defined as either a malignancy receiving treatment, a malignancy diagnosed within 6 months, or metastatic cancer. The justification for describing the cancer type with or without treatment at the time of infection was the potential variability in the state of immunosuppression experienced by each patient at the time of sampling. Further studies, investigating the effects of respiratory viral infection on the clinical course of pneumonia in patients with solid tumors, are urgently needed.

There is no gold standard definition of viral pneumonia [6]. It is often described as diseases with respiratory symptoms compatible with pneumonia, the presence of new

infiltrates on the chest x-ray or computed tomography and the isolation of viral pathogens from respiratory samples (such as nasopharyngeal, oropharyngeal, or bronchoalveolar secretions) using the polymerase chain reaction technique [6]. Upper respiratory tract (URT) specimens are most commonly used in diagnosis, as obtaining lower respiratory tract (LRT) specimens is an invasive procedure. As alluded to by the authors, the presence of viral particles in URT samples does not always reveal the causal pathogens of pneumonia, and may instead be indicative of URT infection in the absence of LRT infection, colonization or past infection [7]. A recent study has also investigated the association between URT specimen viral load and severe pneumonia in children, highlighting the utility of this type of sampling in the diagnosis of viral pneumonia [8]. Although, higher viral loads were observed in the URT samples derived from pneumonia patients compared to those from controls for some respiratory viruses, the results were ambiguous [8]. Further research is therefore urgently needed to improve both the diagnostic accuracy and the clinical management of viral pneumonia.

Declaration of interest statement

The authors declare no conflicts of interest.

References

[1] Burk M, El-Kersh K, Saad M, et al. Viral infection in community-acquired pneumonia: a systematic review and meta-analysis. Eur Respir Rev. 2016; 25: 178-188.

[2] Katsurada N, Suzuki M, Aoshima M, et al. The impact of virus infections on pneumonia mortality is complex in adults: a prospective multicentre observational study. BMC Infect Dis. 2017; 17: 755.

[3] Fazekas T, Eickhoff P, Rauch M, et al. Prevalence and clinical course of viral upper respiratory tract infections in immunocompromised pediatric patients with malignancies or after hematopoietic stem cell transplantation. J Pediatr Hematol Oncol. 2012; 34: 442-449.

[4] von Lilienfeld-Toal M, Berger A, Christopeit M, et al. Community acquired respiratory virus infections in cancer patients – Guideline on diagnosis and management by the Infectious Diseases Working Party of the German Society for Haematology and Medical Oncology. Eur J Cancer. 2016; 67: 200-212.

[5] Chemaly RF, Vigil KJ, Saad M, et al. A multicenter study of pandemic influenza A (H1N1) infection in patients with solid tumors in 3 countries: early therapy improves outcomes. Cancer. 2012; 118: 4627-4633.

[6] Vakil E, Evans SE. Viral pneumonia in patients with hematologic malignancy or

hematopoietic stem cell transplantation. Clin Chest Med. 2017; 38: 97-111.

[7] Ruuskanen O, Lahti E, Jennings LC, Murdoch DR. Viral pneumonia. Lancet. 2011; 377:1264–1275.

[8] Feikin DR, Fu W, Park DE, et al. Is higher viral load in the upper respiratory tract associated with severe pneumonia? Findings from the PERCH Study. Clin Infect Dis. 2017; 64: S337-S346.