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Letters to the Editor

Factor Associated with Prolonged Hospital Stay in Patients with H1N1 Virus Influenza

Factores asociados con la estancia media hospitalaria prolongada en pacientes con neumonía por el virus de la gripe A H1N1

To the Editor:

Pneumonia is the main complication after infection by the H1N1 influenza virus and it is usually the most common cause of hospital admission.[1,2] Prevalence rates of pneumonia in hospitalized patients range from 39% to 66%.[1,3,4] These differences can be attributed to the varied nature of the admission criteria used and the sensitivity of the case detection system. The unfavorable evolution of hospitalized patients has been linked to delay in starting antiviral treatment, use of corticosteroids, age of the patients, and presence of neuromuscular diseases.[1]

We describe a prospective, observational, descriptive study conducted from 25 April to 31 December 2009 in the Hospital General Universitario Reina Sofia, Murcia, Spain. This hospital has 250 adult beds for a population of 200 000 inhabitants. The aim of the study was to estimate the frequency of pneumonia in patients hospitalized with infection by the H1N1 influenza virus and to determine the factors linked to prolonged hospital stay. The pneumonia severity index (PSI) was used to assess the severity of the patients.[5] The diagnosis of H1N1 influenza was confirmed by nasopharyngeal exudate culture and real time PCR using Roche's RealTime ready Influenza A/H1N1 Detection test. The international guidelines[6] and, since September 2009, the Spanish Ministry of Health's recommendations[7] were followed for hospitalizing patients.

Infection with H1N1 influenza virus was diagnosed in 537 patients and 97 patients were hospitalized. There was a 37.1% prevalence of pneumonia (95% confidence interval [CI], 27.4%-46.6%) among the hospitalized patients. The main characteristics of the 36 patients with pneumonia are shown in the Table.

The mean hospital stay was 6.43 days (SD, 4.83). Taking mean hospital stay to be a dependent variable, a multivariate linear analysis was performed which included age, sex, presence of risk factors for complicated H1N1 influenza[7] and/or underlying diseases, smoking habit, multilobular and bilateral pneumonia, coinfection, oxygen saturation on admission to hospital, leukopenia, LDH levels, use of corticosteroids, time interval until Oseltamivir treatment was started, admission to the ICU, and PSI. The best predictors (r^2=0.765; *P*.001) of prolonged hospital stay were PSI (standardized beta coefficient [SBC], +0.317), coinfection (SBC, +0.276), and oxygen saturation on admission to hospital (SBC, ?0.676).

The findings of our study showed an elevated prevalence of pneumonia in patients hospitalized due to H1N1 influenza.[1,3,4] Severity of the patient's condition, respiratory failure on admission and coinfection are known severity factors that can have a negative impact on the outcome of pneumonia and therefore prolong the hospital stay. Fine et al[5] found a mean hospital stay of 5 days for

Table
General characteristics of adult patients hospitalized with pneumonia due to infection by the H1N1 influenza virus

Age, y	42.69 (19.03)
<18 years old, %	2 (5.6)
18-49 years old, %	25 (66.7)
50-64 years old, %	6 (16.7)
≥65 years old, %	4 (11.1)
Male, %	25 (69.44)
Type of pulmonary disorder	
Unilobular, %	14 (38.9)
Multilobular, %	6 (16.7)
Interstitial, %	23 (63.9)
Bilateral, %	20 (55.6)
Bronchopneumonia, %	6 (16.7)
Pleural effusion, %	2 (5.5)
Pneumothorax, %	0
Associated infection, %	7 (19.4)
PSI classification, %	
Class I	13 (36.1)
Class II	9 (25)
Class III	8 (22.2)
Class IV	5 (13.8)
Class V	1 (2.8)
Seasonal influenza vaccination,%	5 (13.88)
H1N1 influenza vaccination, %	1 (2.7)
Smoker, %	11 (30.55)
Underlying disease or risk factor, %	20 (55.5)
Pregnancy, %	0
Asthma, %	4 (11.1)
COPD, %	6 (16.6)
Neurological disorder, %	3 (8.33)
Chronic liver disease, %	1 (2.77)
Neoplasia, %	1 (2.77)
Heart disease, %	1 (2.7)
Chronic renal failure, %	2 (5.5)
Splenectomy, %	0
Immunosuppression, %	0
Diabetes, %	6 (16.6)
Obesity (BMI>30-39 kg/m^2), %	9 (25)
Morbid obesity (BMI≥40 kg/m^2), %	6 (16.6)
Symptoms	
Fever, %	36 (100)
Shivers, %	30 (83.33)
Cough, %	36 (100)
Expectoration, %	19 (52.77)
Dyspnea, %	23 (63.88)
Chest pain, %	12 (33.33)
Headache, %	11 (30.55)
Muscle and joint pain, %	27 (75)
Diarrhoea, %	7 (19.4)
General discomfort, %	24 (66.66)
Respiratory failure, %	13 (36.11)

Table *(continuación)*

LDH, mg/dL	329.23 (164.23)
Leukocytes, cells/mm^3	9655.56 (5701.7)
Platelets, cells/mm^3	182 166.6 (52 925.5)
Use of antibiotics, %	36 (100)
Use of corticosteroids, %	13 (36.11)
Started oseltamivir treatment ≤48 h, %	11 (30.55)
Admission to ICU, %	4 (11.11)
Mean hospital stay, d	6.43 (4.82)
Mortality	0

Continuous variables are represented as mean (SD) and categorical variables as percentage (%).
Abbreviations: BMI, body mass index; COPD, chronic obstructive pulmonary disease; ICU, intensive care unit; LDH, lactate dehydrogenase; PSI, pneumonia severity index

patients at low risk (class I), while the mean hospital stay reached 11 days for more serious patients (class V). However, corticosteroids could be administered as a protective measure as they stop the inflammatory process brought on by the viral infection and prevent clinical deterioration.[1]

In summary, the study highlights that pneumonia is a common complication in patients hospitalized with infection by H1N1 influenza virus. It also shows that the factors identified in this article should be considered in cases of pneumonia when assessing how long patients infected with the H1N1 influenza virus should be hospitalized for.

References

1. Jain S, Kamimoto L, Bramley AM, Schmitz AM, Benoit SR, Louie J, et al. Hospitalized patients with 2009 H1N1 influenza in the United States, April-June 2009. N Engl J Med. 2009;361:1935-44.
2. Gilsdorf A, Poggensee G; on behalf of the working group pandemic influenza A(H1N1)v. Influenza A(H1N1)v in Germany; the first 10 000 cases. Euro Surveill. 2009;14:19318.
3. Louie JK, Acosta M, Winter K, Jean C, Gavali S, Schechter R, et al. Factors associated with death or hospitalization due to pandemic 2009 influenza A(H1N1) infection in California. JAMA. 2009;302:1896-902.
4. Mayoral Cortes JM, Puell GL, Pérez ME, Gallardo GV, Duran PE, Fernández Merino JC, et al. Behaviour of the pandemic H1N1 influenza virus in Andalusia, Spain, at the onset of the 2009-10 season. Euro Surveill. 2009;14.
5. Fine MJ, Auble TE, Yealy DM, Hanusa BH, Weissfeld LA, Singer DE, et al. A prediction rule to identify low-risk patients with community-acquired pneumonia. N Engl J Med. 1997;336:243-50.
6. Centers for Disease Control and Prevention. H1N1 flu clinical and public health guidance. Available from: http://www.cdc.gov/h1n1flu/guidance/
7. Ministerio de Sanidad y Política Social, España. Guías y protocolos para profesionales sanitarios. Septiembre 2009. Available from: http://www.msps.es/profesionales/saludPublica/gripeA/guiasProtocolosInf/profSanit.htm

Enrique Bernal,* Ángeles Muñoz, Alfredo Cano

Sección de Enfermedades Infecciosas, Hospital General Universitario Reina Sofía, Murcia, Spain

*Corresponding author.
E-mail address: enrbernal@yahoo.es (E. Bernal).

Advance Care Planning with COPD Patients

Planificación de cuidados y tratamientos en pacientes EPOC

To the Editor:

After reading the interesting article by A. Couceiro,[1] I think it is appropriate to elaborate on it with the results of a qualitative study[2] that explores decision making in COPD patients in terms of their treatment, based on their knowledge of the disease, information provided by the doctor in charge, and the patient's preferences (Research assistance from the Respira Foundation, SEPAR grants, 2002). Semi-structured interviews were carried out with 40 patients (36 men and 4 women) with a mean age of 68.82 years. Most felt well-informed and none thought the information given was incomplete or that it was being concealed from them. None had ever been spoken to by their doctor in charge about being admitted to the ICU or about mechanical ventilation (MV) as a possible treatment for a severe exacerbation, except for 2 who had previously been admitted to the ICU. After an explanation of MV as part of a the treatment for severe exacerbations, they gave their consent to the procedure if it meant they could improve and maintain their current quality of life–*I would choose intubation if it means I can carry on living like up till now, but if I don't improve after about six days, they can give me something to stop the suffering and that's it…at least we tried.*

The patients included in the study believed that they had the right to participate in the decision-making that affected their health. Although they recognized doctors as the expert, *they know what is good for me…* they preferred to be asked, or at least taken into consideration, about treatment planning.

The patients interviewed had an adequate level of information about the etiology of COPD, its common symptoms, and that it is a chronic and progressive disease. Despite this, many gaps were detected in the information given regarding prognosis, knowledge of MV, and admission to the ICU as treatment options for severe exacerbations. The process of providing information is commonly seen to stop at a point, a boundary that is difficult to cross: talking about end-of-life matters. Going beyond the everyday range of topics of the medical relationship to talk about more transcendental matters and find out the possible ways to proceed when their situation is not as stable as at present is something that still needs to be looked at.

One of the reasons for this lack of information may be the doctor in charge's fear of frustrating the patient's hopes. Certainly, if we want the patients to collaborate effectively in the process, it is important to know what their expectations and wishes are.[3] It appears that the relationship of trust is based on *everything is OK,* and both sides avoid talking about unpleasant matters such as serious complications or the possibility of dying of COPD.

Most patients were unaware of the possibility of putting into writing their preferences regarding health-related matters with an advance directive (AD). Furthermore, it did not occur to them that it might be of interest to them. They believed that it was aimed at people who are dying. Another possible reason for the lack of information about care planning is that the doctor in charge is convinced that they really know their patient's preferences.[4] Several studies have shown that this is often not the case. Even when both opinions coincide, the AD process could be of use because the doctor who has to make the decisions in severe acute situations would most likely not have prior knowledge of the patient.[5,6]