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Influenza Associated Comorbidities

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Abstract: ***Influenza, one of the most common infectious diseases, is a highly contagious airborne disease that occurs in seasonal epidemics and manifests as an acute febrile illness with variable degrees of systemic symptoms, ranging from mild fatigue to respiratory failure and death. The aim of the study was to highlight the associated comorbidities of influenza. This is a retrospective study of patients admitted during the influenza season 2015-2016 at the Infectious diseases hospital at University Hospital Centre "Mother Teresa", in Tirana, Albania. Overall, among the <65-years and 65-years-and-older age groups, hypertension and diabetes, respectively, were observed with the highest frequency. Heart failure was the second most frequent comorbidity in these two age groups. Prevention of influenza in the elderly is of utmost importance for mitigating its impact on this high-risk population. The main components of prevention are measures that avoid transmission, prophylaxis with antiviral drugs, and vaccination.***

Keywords: influenza, severity, comorbidity, elderly, prevention

1. Introduction

Influenza, one of the most common infectious diseases, is a highly contagious airborne disease that occurs in seasonal epidemics and manifests as an acute febrile illness with variable degrees of systemic symptoms, ranging from mild fatigue to respiratory failure and death. Influenza causes significant loss of workdays, human suffering, and mortality. In patients without comorbid disease who contract seasonal influenza, the prognosis is very good. However, some patients have a prolonged recovery time and remain weak and fatigued for weeks. Mortality from seasonal influenza is highest in infants and the elderly.

The prognosis for patients with avian influenza is related to the degree and duration of hypoxemia. Cases to date have exhibited a 60% mortality; however, Wang et al suggest that this may be an overestimate stemming from the underreporting of mild cases (1). The risk of mortality from avian influenza depends on the degree of respiratory disease rather than on the bacterial complications (pneumonia). Mortality is significantly lower among patients cared for in more-developed nations. Little evidence is available regarding the long-term effects of disease among survivors.

Diabetes increases the risk of severe flu-related illness. In a cohort study of 166,715 individuals in Manitoba, Canada, Lau and colleagues found that adults with diabetes are at significantly greater risk for serious illness related to influenza compared with those without diabetes; this justifies guideline recommendations for influenza vaccination in this population. After controlling for age, sex, socioeconomic status, location of residence, comorbidities, and vaccination, adults with diabetes had a significant increase (6%) in all-cause hospitalizations associated with influenza (p=0.044). Only 16% of the patients with diabetes in the cohort and 7% of the patients without diabetes had been vaccinated (2, 3). The aim of the study was to highlight the associated comorbidities of influenza.

2. Material and Methods

This is a retrospective study of patients admitted during the influenza season 2015-2016 at the Infectious diseases hospital at University Hospital Centre "Mother Teresa", in Tirana, Albania. Data were collected using n individual case investigation form. This study was conducted by analyzing confirmed diagnostic influenza cases from hospital discharge data (HDD) for inpatients. Medical expenses and comorbidities of patients hospitalized for influenza in Albania between 2007 and 2011 were also estimated using HDD for inpatients. Comorbidity Classification Comorbidity of patients with influenza was defined according to the ICD-9-CM in the secondary diagnosis positions. The analysis of comorbidities was focused on conditions that have been shown to be associated with influenza. The chronic comorbid illnesses associated with severe influenza analyzed in this study were chronic lung disease (i.e., asthma), chronic cardiac disease (i.e., congestive heart failure), metabolic disease (i.e., diabetes mellitus), and immunosuppressive conditions (i.e., cancer, transplant, immunosuppressive drugs, HIV/ AIDS) (4, 5).

3. Results

A total of 183 patients with influenza like symptoms were admitted during the influenza season. The mean age of patients was 38.8 (18.7) years. 79 (43.2%) of the patients were identified as being infected with influenza virus. The percentage of common comorbidities for patients hospitalized with influenza is shown by year in Table 1. Asthma was observed with higher frequency than other

comorbidities for all years. In addition, age stratification showed that asthma was observed more frequently than other comorbidities among the younger than-5-years, 5-19-years, and 20-49-years age groups. Overall, among the <65-years and 65-years-and-older age groups, hypertension and diabetes, respectively, were observed with the highest frequency. Heart failure was the second most frequent comorbidity in these two age groups. These results are consistent with previous studies reporting that one-third of the patients in the United States hospitalized with influenza had asthma (6). In addition, a recent study by McKenna et al. reported an overlap in asthma and chronic obstructive pulmonary disease (COPD) in over 20% of the 50-64-years and 65-years-and-older age groups (7). However, because these patients are not regularly monitored by spirometer, it is difficult to determine whether they had asthma, COPD, or both asthma and COPD (8). Additionally, previous studies evaluating the use of ICD-9 codes have found a potential significant underestimation of hospitalization due to influenza when comparing hospital discharge codes to laboratory confirmation of influenza (9). Including a wider range of ICD-9 codes may increase sensitivity in capturing hospitalizations related to influenza, but would likely lead to a high degree of false classification. Further studies are needed to evaluate the predictive value of ICD-9 coding groups in classifying influenza hospitalizations in Albania.

4. Conclusion

Prevention of influenza in the elderly is of utmost importance for mitigating its impact on this high-risk population. The main components of prevention are measures that avoid transmission, prophylaxis with antiviral drugs, and vaccination. Among these strategies, vaccination is most important for reducing morbidity and mortality. As the evidence mounts that influenza infection may be a factor in the pathogenesis of cardiovascular disease, immunization against influenza takes on even greater importance. Health care providers must take an active role in ensuring that their patients receive influenza vaccine. Measures to avoid transmission include non-pharmacological interventions, i.e., frequent hand washing, respiratory hygiene, and cough etiquette. Traditional infection control measures should obviously be instituted when there is any case of influenza (10, 11). In long-term care facilities, outbreaks of influenza should lead to the initiation of a comprehensive approach to contain virus transmission. Increased hand hygiene practices, as well as cleaning and disinfecting surfaces with an approved antiseptic product, use of droplet precautions (surgical masks), cohorting of residents, vaccination of those previously not immunized against influenza, and possibly prophylaxis with antiviral drugs. The utilization of these interventions should not replace vaccine administration (10). Most of the available vaccines administered in this population are trivalent inactivated (split-virus or subunit) that contain two A strains (pH1N1 and H3N2) and one B strain, whichever one is most likely to cause disease in the following season (12).

References

[1] Wang TT, Parides MK, Palese P. Seroevidence for H5N1 influenza infections in humans: meta-analysis. *Science*. 2012 Mar 23. 335 (6075):1463. [Medline].
[2] Lau D, Eurich D, Majumdar S, Katz A, Johnson J. Working-age adults with diabetes experience greater susceptibility to seasonal influenza: a population-based cohort study. Diabetologia- Springer Link. Available at http://link.springer.com/article/10.1007/s00125-013-3158-8#. Accessed: February 3, 2014.
[3] Melville N. New Evidence: Diabetes Does Up Risk for Flu-Related Illness. Medscape [serial online]. Available at http://www.medscape.com/viewarticle/819737. Accessed: February 3, 2014.
[4] McKenna, J.J., Bramley, A.M., Skarbinski, J., Fry, A.M., Finelli, L. and Jain, S. (2013) Asthma in Patients Hospitalized with Pandemic Influenza A(H1N1)pdm09 Virus Infection-United States, 2009. *BMC Infectious Diseases*, **57**,1471-2334.
[5] Bolton, C.E., Ionescu, A.A., Edwards, P.H., Faulkner, T.A., Edwards, S.M. and Shale, D.J. (2005) Attaining a Correct Diagnosis of COPD in General Practice. *Respiratory Medicine*, **4**, 493-500.
[6] Keren, R., Wheeler, A., Coffin, S.E., Zaoutis, T., Hodinka, R. and Heydon, K. (2006) ICD-9 Codes for Identifying Influenza Hospitalizations in Children. *Emerging Infectious Diseases*, **10**, 1603-1604.
[7] Jefferson T, Jones MA, Doshi P, Del Mar CB, Heneghan CJ, Hama R, et al. Neuraminidase inhibitors for preventing and treating influenza in healthy adults and children. Cochrane Database Syst Rev. 2012;1(18):CD008965. 3
[8] 1. Hsu J, Santesso N, Mustafa R, Brozek J, Chen YL, Hopkins JP, et al. Antivirals for treatment of influenza: a systematic review and meta analysis of observational studies. Ann Intern Med. 2012;156(7):512–24.
[9] Fiore AE, Uyeki TM, Broder K, Finelli L, Euler GL, Singleton JA, et al. Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. MMWR. 2010;59(RR-8):1–62.
[10] Jefferson T, Foxlee R, Del Mar C, Dooley L, Ferroni E, Hewak B, et al. Interventions for the interruption or reduction of the spread of respiratory viruses. Cochrane Database Syst Rev. 2007;(4):CD006207.
[11] Grayson ML, Melvani S, Druce J, Barr IG, Ballard SA, Johnson PDR, et al. Efficacy of soap and water and alcohol-based hand-rub preparations against live H1N1 influenza virus on the hands of human volunteers. Clin. Infect Dis. 2009;48(3):285–91.
[12] Bonvehí PE, Istúriz RE, Labarca JA, Rüttimann RW, Vidal EI, Vilar-Compte D. Influenza among adults in Latin America, current status, and future directions: a consensus statement. Rev Panam Salud Publica. 2012;31(6):506–12.

Table 1: Frequency of comorbidities for with influenza by age group

Comorbidities	<65 y	≥ 65 y
Hypertension	42.6	48.8
Diabetes mellitus	33.2	29.0
Asthma	16.5	8.3
Heart failure	11.0	21.8
Chronic bronchitis	12.3	11.6
Neoplasms	9.3	8.3
Transplant	5.9	3.7