Seasonality of Pneumonia Admissions and Its Association with Climate; A Eight-year Nationwide Population-based Study

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Abstract

The aim of the study was to examine seasonal variability in monthly admissions for community-acquired pneumonia (CAP) in Taiwan. Our study sample comprised 477,541 pneumonia patients in Taiwan between 1998 and 2005, inclusive. Results showed a fairly consistent seasonal pattern of pneumonia admissions, regardless of sex and age, and for the groups combined. Seasonal trends showed a peak in hospitalizations from January through April, followed by a sharp decrease in May and a trough from August through October. The auto-regressive integrated moving average (ARIMA) test found significant seasonality for all age and sex groups and for the whole sample (all $p < 0.001$). After adjusting for seasonality, month, and trends, the ARIMA regression models revealed that the monthly pneumonia admissions rate was significantly associated with ambient temperature, for the total sample, for female groups, and for the 65-74 and ≥75 age groups (all $p < 0.01$). A 1°C decrease in ambient temperature was associated with roughly a 0.03 increase in monthly pneumonia admissions rate (per 10,000 people) for the entire sample. We conclude the monthly pneumonia admissions rate was significantly associated with seasonality, and was higher in periods with low ambient temperatures.