

Clinical symptoms associated with influenza infection in Alberta during the 2018/2019 “FLU” season

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Background

The Alberta Recording and Research Network (TARRANT) has provided public health influenza surveillance in Alberta for over three decades to help monitor annual influenza outbreaks. The WHO case definition for an influenza like illness is:

“An acute respiratory infection with measured fever of greater than or equal 38°C, cough and onset within the last 10 days.”

Influenza can be difficult to diagnose as flu symptoms are not specific. We therefore asked:

How well do different symptoms predict a positive flu result?

Methods

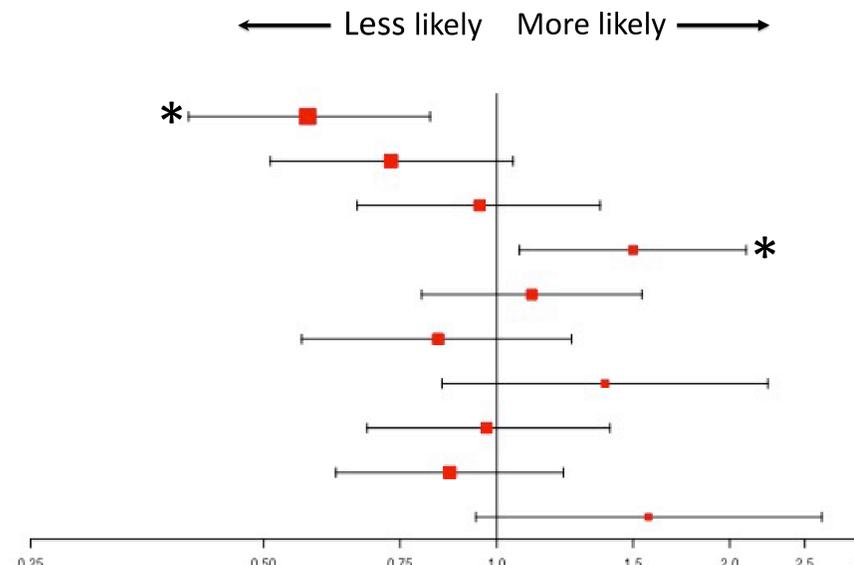
A descriptive cross-sectional analysis using data from the 2018-2019 TARRANT data set. Volunteer sentinels (family physicians and nurse practitioners) around the province identify patients with an influenza like illness and after verbal consent is obtained, send nasopharyngeal swabs to the laboratory along with a brief questionnaire containing patient symptoms. Laboratory detection of the influenza virus is done using PCR. Odds Ratios for each symptom were calculated and a logistic regression using the backward elimination approach was performed.

Results

So far this season, 624 cases of influenza like illness have been reported by our sentinels. 283 (45.4%) were laboratory confirmed as influenza positive (all but one was Influenza A). All cases of influenza like illness reported fever and cough as per the case definition (fever may be excluded for patients 65 or older). Other symptoms being assessed include sore throat, myalgia, arthralgia, prostration, headache, nausea, vomiting, diarrhea, runny nose and conjunctivitis. Among patients with influenza, the other symptoms most frequently reported were myalgia 66.8%, prostration 63.3%, sore throat 62.9% and headache 45.6%

Odds ratio of symptoms that predict positive influenza result

Symptom	OR
Sore Throat	0.57
Myalgia	0.73
Arthralgia	0.95
Prostration	1.50
Headache	1.11
Nausea	0.84
Vomiting	1.38
Diarrhea	0.97
Runny Nose	0.87
Conjunctivitis	1.57



Prostration, headache, vomiting and conjunctivitis were associated with a higher odds of a positive flu result. Only prostration was statistically significant. Those with sore throat, arthralgia, myalgia, nausea, diarrhea and runny nose had a lower odds of having a positive flu result. Using a logistic regression analysis with a backward elimination approach, the factor found to be most predictive of a positive flu result was prostration ($p=0.03$).

Discussion

Knowledge of the symptoms associated with an influenza infection can aid early diagnosis and treatment of the disease. Fever and cough have been validated by several studies as the most predictive of an influenza infection and thus form part of the case definition for an influenza like illness. Fever and cough plus prostration was most predictive of a positive result. This will assist family physicians to more accurately diagnosing influenza.

Sore throat was associated with a lower odds of an influenza infection. This was not surprising as sore throat was removed from the WHO case definition of an influenza like illness since previous studies had shown a lack of association with influenza.

Our study did not include hospitalized patients and so findings are not generalizable to hospitalized patients. Also, since all but one case was Influenza A, in an H1N1 dominant year these results may be specific to this strain. Further analysis will be done with H3N2 and Influenza B from previous influenza seasons.

Conclusion

Prostration along with fever and cough was most predictive of a positive influenza result. This information can assist family physicians in early diagnosis and treatment of influenza cases.

Bibliography

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