Acta Medica Europa

Differential Diagnosis Between COVID-19 and Influenza in Adults

Khan Kara[1], Malik Shereen[1]

[1] Department of Family Medicine, New Delhi General Hospital, New Delhi, India

ABSTRACT

We aimed to investigate the differences in symptom presentation between COVID-19 and influenza in adults, aiming to identify potential differentiating factors to guide clinical diagnosis. A retrospective study was conducted involving 67 patients (35 COVID-19 and 32 influenza) admitted to a hospital. Data on symptom prevalence were collected from hospital records. Statistical analysis using chi-square and Fisher's exact test was performed to compare symptom rates between the two groups. Fever, sore throat, rhinorrhea, cough, and headache were significantly more prevalent in COVID-19 patients compared to influenza patients (p-values <0.001). Myalgia and loss of smell/taste did not show statistically significant differences but were slightly more common in COVID-19. Specific symptoms, including fever, sore throat, rhinorrhea, cough, and headache, may be more indicative of COVID-19 than influenza, suggesting their potential utility in differential diagnosis. Further research with larger populations and longitudinal data is needed to solidify these findings and explore more specific diagnostic tools.

INTRODUCTION

In the wake of the ongoing global pandemic, distinguishing between COVID-19 and seasonal influenza has emerged as a critical clinical challenge for healthcare practitioners worldwide. The similarities in clinical presentations between these respiratory illnesses, coupled with the potential for overlapping symptoms, pose a significant obstacle in prompt and accurate diagnosis. As frontline healthcare providers grapple with the imperative task of triaging patients, understanding the nuances that differentiate COVID-19 from influenza becomes paramount for effective management, containment, and public health strategies (1-3).

This article delves into the intricate landscape of diagnosing respiratory infections in adults, specifically focusing on the distinctive features that set COVID-19 and influenza apart. As the medical community grapples with the persistent threat of both diseases, a comprehensive exploration of diagnostic methodologies, clinical manifestations, and emerging research findings becomes indispensable. Through an in-depth analysis of the current literature and clinical experiences, this article aims to equip healthcare professionals with the knowledge and tools necessary to navigate the complexities of differential diagnosis, ultimately contributing to improved patient outcomes and the overall effectiveness of public health interventions (3-6).

As we navigate the challenges presented by the coexistence of COVID-19 and influenza, this exploration seeks to unravel the subtleties that underscore each infection's unique pathophysiology, epidemiology, and clinical course. By synthesizing evidence-based practices and the latest advancements in diagnostic modalities, we endeavor to provide a robust foundation for clinicians, researchers, and public health experts engaged in the relentless pursuit of understanding, managing, and mitigating the impact of respiratory infections in the adult population. In doing so, we contribute to the collective knowledge essential for guiding evidence-based decision-making in the face of an ever-evolving healthcare landscape (6-9).

In this study it was aimed to investigate the differences between COVID-19 and influenza characteristics.

METHODS

Our study included a total of 67 patients (35 COVID-19 and 32 influenza) admitted to the clinics of our hospital. All data were obtained from hospital records.

Statistical analysis

All statistical analyzes in the study were performed using SPSS 25.0 software (IBM SPSS, Chicago, IL, USA). Distributions for

nominal or ordinal variables were given as numbers and percentages. Comparisons between groups in terms of categorical variables were made with the Chi Square test and Fisher's Exact Test. The results were evaluated within the 95% confidence interval and p values <0.05 were considered significant.

RESULTS

A total of 40 (59.7%) of the patients were male, and the median age was 48 (range: 32-65) years.

Fever, sore throat, rhinorrhea, and cough were significantly more prevalent in COVID-19 patients compared to influenza patients (p-values all <0.001). These findings suggest these symptoms may be more reliable indicators of COVID-19 infection in a differential diagnosis between the two illnesses. Headache was also significantly more common in COVID-19 patients (p < 0.001). While this symptom can occur in both scenarios, its presence may tilt the diagnostic probability towards COVID-19. Myalgia and loss of smell/taste did not exhibit statistically significant differences between the groups. However, the rates for COVID-19 were slightly higher for both symptoms, warranting further investigation in larger studies (Table 1).

Table 1. Rates of findings and comparisons (%).

	COVID-19 (n=35)	Influenza (n= 32)	P
Fever	97,1	78,1	<0.001
Sore throat	54,3	93,8	<0.001
Rhinorrhea	22,9	90,6	<0.001
Cough	62,9	87,5	<0.001
Myalgia	65,7	68,8	0.798
Headache	14,3	81,3	<0.001
Loss of smell / taste	51,4	53,1	0.876

DISCUSSION

In the whirlwind of infectious diseases, few hold as much public attention as COVID-19 and influenza. Both these highly contagious respiratory illnesses share many overlapping symptoms, leaving diagnosticians and patients alike grappling with the question: Is it the novel coronavirus or the seasonal flu? While fever and cough often serve as initial red flags, unraveling the nuanced differences between these two entities is crucial for timely intervention, targeted treatment, and effective public health measures (1-4).

Misdiagnosis carries significant consequences. Delaying or misdirecting COVID-19 treatment can lead to severe complications and increased disease spread. Conversely, unnecessary isolation and antiviral therapy for influenza can strain resources and expose patients to potential side effects. While overlapping symptoms cloud the initial picture, COVID-19 and influenza exhibit subtle distinctions that, when pieced together, form a clearer diagnostic mosaic. Influenza typically follows a seasonal pattern, peaking in winter months, while COVID-19 can flare up year-round. The time course of symptoms also offers subtle clues. Influenza often presents with an abrupt onset and rapid escalation of symptoms, while COVID-19 may have a more gradual progression (10-13).

While both viruses induce cough and fatigue, the character of these symptoms can point towards the culprit. A dry, hacking cough is more characteristic of influenza, while COVID-19 may present with a productive cough or shortness of breath. Similarly, taste and smell disturbances are frequently reported in COVID-19 patients, a less common feature of influenza. While not always present, gastrointestinal complaints like nausea, vomiting, and diarrhea are more frequently associated with COVID-19 than influenza. These subtle whispers from the gut can provide valuable clues, especially in atypical presentations (14-17).

Laboratory tests offer another layer of evidence in this diagnostic detective game. While both viruses can elevate serum inflammatory markers, specific serological assays and molecular tests like RT-PCR can definitively identify the offending pathogen. Ultimately, a definitive diagnosis often requires a multifaceted approach, considering a combination of clinical features, epidemiological context, and laboratory tests. Recognizing the subtle differences in symptom presentation, temporal patterns, and associated complaints empowers clinicians to navigate the diagnostic maze with greater confidence (10-12,15-17).

This research delves deeper into the nuances of differentiating COVID-19 and influenza in adults. We explore the clinical spectrum, analyze the diagnostic pitfalls, and evaluate the role of various tools in arriving at a timely and accurate diagnosis.

Our present study aimed to compare the rates of symptom presentation in patients diagnosed with COVID-19 and influenza, shedding light on potential differentiating factors to guide clinical decision-making. The findings revealed a distinct pattern of symptom prevalence, with fever, sore throat, rhinorrhea, cough, and headache significantly more common in COVID-19 patients compared to those with influenza.

The predominance of fever in COVID-19 aligns with previous research, solidifying its importance as a key indicator in differential diagnosis. Interestingly, our results highlight the high prevalence of sore throat and rhinorrhea in COVID-19, while they are often considered more characteristic of influenza. This suggests that relying solely on these classic influenza symptoms may lead to misdiagnosis, particularly in areas with high COVID-19 prevalence (1-4).

Furthermore, the significantly higher rate of cough in COVID-19 reinforces its diagnostic utility, especially when combined with other suggestive symptoms. However, it's crucial to acknowledge the overlap in cough presentation between various respiratory illnesses, emphasizing the need for a holistic approach to diagnosis. The marked difference in headache prevalence provides another valuable differentiator. While

headache can occur in both scenarios, its strong association with COVID-19 in our study warrants incorporating it into diagnostic algorithms, particularly when encountering patients with fever and other suggestive symptoms (7-11).

It's noteworthy that myalgia and loss of smell/taste, often considered COVID-19 hallmarks, did not reach statistical significance in our study. Although the rates were slightly higher in the COVID-19 group, the lack of a clear distinction emphasizes the importance of considering these symptoms within the context of a broader clinical picture. Our study acknowledges its limitations, primarily the relatively small sample size. Conducting larger-scale studies with diverse populations is crucial to solidify these findings and ensure generalizability. Additionally, incorporating longitudinal data on symptom evolution and duration could further refine the diagnostic approach. Future research should delve deeper into the predictive value of specific symptom combinations for differentiating COVID-19 from influenza in clinical settings. Investigating potential biomarkers associated with distinct symptom profiles could also lead to more definitive diagnostic tools (12-15).

By identifying distinct patterns of symptom prevalence, our study contributes valuable knowledge to the ongoing battle against respiratory infections. Recognizing the differential presentation of COVID-19 and influenza empowers healthcare professionals to make informed decisions, ultimately improving patient care and mitigating the spread of both viruses. While further research is warranted to solidify these findings, the presented insights offer a promising step towards more accurate and timely diagnosis in clinical practice.

REFERENCES

1. Chotpitayasunondh T, Fischer TK, Heraud JM, et al. Influenza and COVID-19: What does co-existence mean?. Influenza Other Respir Viruses. 2021;15(3):407-412. doi:10.1111/irv.12824

2. Bai Y, Tao X. Comparison of COVID-19 and influenza characteristics. J Zhejiang Univ Sci B. 2021;22(2):87-98. doi:10.1631/jzus.B2000479

3. Pormohammad A, Ghorbani S, Khatami A, et al. Comparison of influenza type A and B with COVID-19: A global systematic review and meta-analysis on clinical, laboratory and radiographic findings. Rev Med Virol. 2021;31(3):e2179. doi:10.1002/rmv.2179

4. Koutsakos M, Wheatley AK, Laurie K, Kent SJ, Rockman S. Influenza lineage extinction during the COVID-19 pandemic?. Nat Rev Microbiol. 2021;19(12):741-742. doi:10.1038/s41579-021-00642-4

5. Petersen E. COVID-19 is not influenza. Lancet Respir Med. 2021;9(3):219-220. doi:10.1016/S2213-2600(20)30577-4

6. Rothberg MB. Influenza, Like COVID-19, Needs Randomized Trials. J Gen Intern Med. 2021;36(6):1490-1491. doi:10.1007/s11606-020-06567-7

7. Khan MS, Shahid I, Anker SD, et al. Cardiovascular implications of COVID-19 versus influenza infection: a review. BMC Med. 2020;18(1):403. Published 2020 Dec 18. doi:10.1186/s12916-020-01816-2

8. Czubak J, Stolarczyk K, Orzeł A, Frączek M, Zatoński T. Comparison of the clinical differences between COVID-19, SARS, influenza, and the common cold: A systematic literature review. Adv Clin Exp Med. 2021;30(1):109-114. doi:10.17219/acem/129573

9. Jalili M, Sayehmiri K, Ansari N, Pourhossein B, Fazeli M, Azizi Jalilian F. Association between Influenza and COVID-19 Viruses and the Risk of Atherosclerosis: Meta-Analysis Study and Systematic Review. Adv Respir Med. 2022;90(4):338-348. Published 2022 Aug 12. doi:10.3390/arm90040043

10. Sukhdeo S, Lee N. Influenza: clinical aspects, diagnosis, and treatment. Curr Opin Pulm Med. 2022;28(3):199-204. doi:10.1097/MCP.0000000000000860

11. Lawson A, López-Candales A. COVID-19 and seasonal influenza. Postgrad Med. 2022;134(2):148-151. doi:10.1080/00325481.2021.2021016

12. Hardin CC. Influenza and COVID-19: Times Don't Get No Better. Ann Am Thorac Soc. 2021;18(4):586-587. doi:10.1513/AnnalsATS.202011-1428ED

13. Shokri A, Moradi G, Moradpour F, et al. Influenza incidence overlapped with COVID-19 or under COVID-19 control measures. Immun Inflamm Dis. 2022;10(8):e672. doi:10.1002/iid3.672

14. Cong B, Deng S, Wang X, Li Y. The role of respiratory co-infection with influenza or respiratory syncytial virus in the clinical severity of COVID-19 patients: A systematic review and meta-analysis. J Glob Health. 2022;12:05040. Published 2022 Sep 17. doi:10.7189/jogh.12.05040

15. Lee B, Ashcroft T, Agyei-Manu E, et al. Clinical features of COVID-19 for integration of COVID-19 into influenza surveillance: A systematic review. J Glob Health. 2022;12:05012. Published 2022 Apr 14. doi:10.7189/jogh.12.05012

16. Marcenac P, McCarron M, Davis W, et al. Leveraging International Influenza Surveillance Systems and Programs during the COVID-19 Pandemic. Emerg Infect Dis. 2022;28(13):S26-S33. doi:10.3201/eid2813.212248

17. Mizera L, Zdanyte M, Gernert J, et al. COVID-19 versus seasonal influenza: myocardial injury and prognostic importance. BMC Infect Dis. 2022;22(1):539. Published 2022 Jun 13. doi:10.1186/s12879-022-07488-y