Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024

Atypical Presentation of Viral Pneumonia

Abhishek Das[1], Saswat Subhankar[2], Ashim K Mahali[3], Debasis Behera[4]

[1]Junior Resident, Department of Respiratory Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India

[2]Associate Professor, Department of Respiratory Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India

[3]Assistant Professor, Department of Nephrology, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India

[4]Assistant Professor, Dept of Respiratory Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India

Corresponding author: Debasis Behera, Assistant Professor, Dept of Respiratory Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India (debasis.behera3@kims.ac.in)

Abstract

Atypical pneumonia has been thought to account for 7%-20% of community-acquired pneumonia. The presentation in atypical pneumonia may be different and not as prominent as typical pneumonias. Therefore, identification of the causative pathogen in a primary care situation is crucial for adequate treatment. Herein, we report a case of a young immunocompetent male patient who presented to us with features of acute kidney injury. RTPCR of throat swab was positive for adenovirus. Patient was started on supportive treatment and improved symptomatically after 3 days of treatment.

Keywords- Atypical pneumonia, Adenovirus, Acute kidney injury.

INTRODUCTION

Pneumonia is a lower respiratory tract infection, specifically involving pulmonary parenchyma commonly caused by bacteria, viruses or fungi. The severity of pneumonia can range from mild to life-threatening, with uncomplicated disease resolving with outpatient antibiotics while complicated cases progressing to septic shock, acute respiratory distress syndrome (ARDS) and death (1).

Atypical micro-organisms are known to cause a disproportionate disease burden in children and adolescents. They present sub acutely and with progressive constitutional symptoms (2). The treatment for the pathogens that cause atypical pneumonia is different from that of other bacterial pneumonia. Therefore, identification of the causative pathogen in an emergency is crucial for adequate treatment of CAP.

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024

Viral pneumonia is one of the causes of atypical pneumonia that occurs predominantly in children or elderly and in the immunocompromised (3,4). Although reported to be common during the winter seasons, it may develop year-round.

There are many instances of patients with viral pneumonia developing acute kidney injury (AKI) during hospitalization, an occurrence that has been attributed to infection, drugs, major surgeries etc. (5,6). However, viral pneumonia with AKI as the presenting complaint has never been reported. Herein, we report a case of viral pneumonia in an immunocompetent patient that was presented with AKI.

CASE REPORT

A 31-year-old male presented with complaints of shortness of breath, fever, generalized body ache and weakness for 4-5 days. His past history was insignificant, and he did not have any comorbidities.

On examination the patient was tachypneic with a respiratory rate of 34 per minute and oxygen saturation (SpO2) of 93% at room air. General examination revealed bilateral pitting. On auscultation, the patient had crepitations in both hemi thoraces.

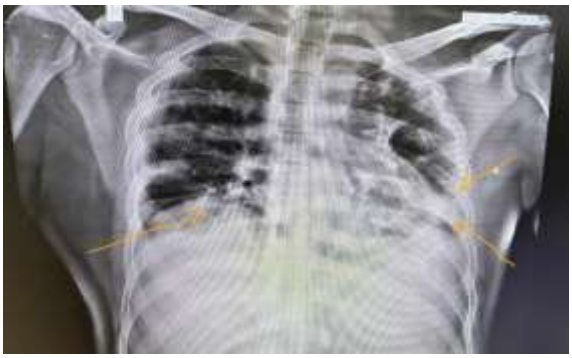

Fig 1 : Chest Xray showing bilateral areas of consolidation.

Chest Xray was done suggestive of bilateral areas of consolidation in lower zones (figure 1).
The patient was initially admitted with a diagnosis of AKI but due to repeated episodes of desaturation was shifted to high dependency unit (HDU) for better monitoring. Patient was started on O2 inhalation and other supportive measures. All routine investigations were within normal limit except his renal function test which showed serum urea of 56mg/dL, creatinine of 5.7mg/dL. Urine ACR was 42.30. His d-dimer levels were elevated.

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024

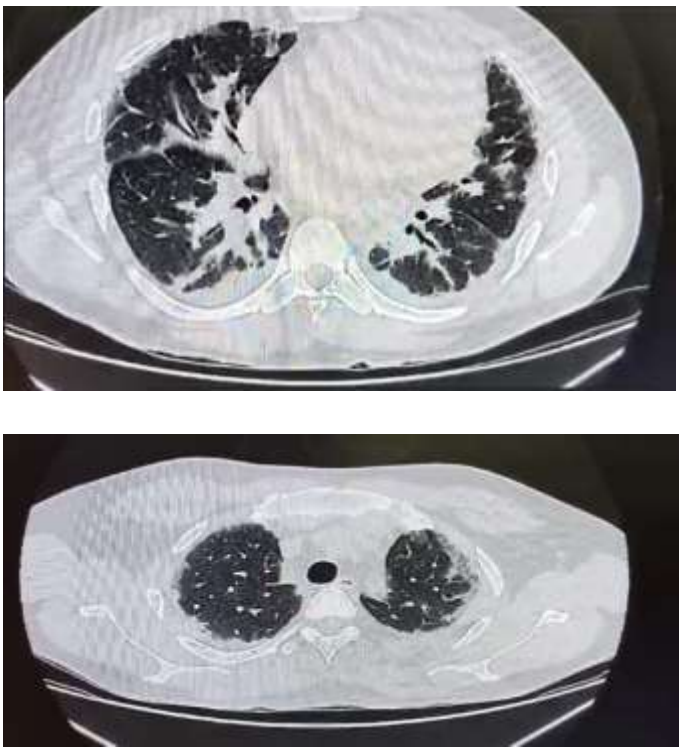

Fig 2:CT thorax suggestive of bilateral pleural effusion with basal atelectasis, ground glass opacities with subsegmental atelectasis in bilateral upper lobes

CT thorax was suggestive of bilateral pleural effusion with basal atelectasis, ground glass opacities with subsegmental atelectasis in bilateral upper lobes with few enlarged mediastinal lymph nodes noted in subaortic, pretracheal and right paratracheal region (Figure 2). 2D echocardiogram was normal with an ejection fraction of 62%. Viral RTPCR was positive for adenovirus.

The patient was started on oral antivirals and low molecular weight heparin (LMWH) along with other supportive measures. The patient improved symptomatically over the next few days and oxygen requirement declined. His renal functions also improved.

The patient improved clinically and was discharged with hemodynamically stable condition. He was doing well at follow-up after 2 weeks.

DISCUSSION

Viruses are a common cause of pneumonia (7). The prevalence of hospitalization due to viral pneumonia is highest in elderly patients and patients with co-morbidities (8,9). Having witnessed the pandemic associated with the novel coronavirus causing COVID-19, it is important to know the clinical presentation and immunologic changes associated with viral pneumonia. Symptoms of viral pneumonia include cough, fever, and shortness of breath.

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024

Adenovirus pneumonia is common in immunocompromised patients and a high fatality rate has been reported (10).

A variety of immunological changes occur in patients with viral pneumonia. These include up-regulation of airway pro-inflammatory cytokines like interferon y, interleukins-6 and 8 and tumor necrosis factor a (11-14). The immune mechanism is regulated through pathogen- and damage-associated molecular patterns (7, 15,16). A dysregulation of the immune mechanism leads to lung injury and systemic inflammatory response (7).

The systemic manifestations vary, but these complications are largely interwoven by certain shared mechanisms, involving direct viral cytotoxicity, immune disturbances, endothelial damage and thrombo-inflammation, and ACE2-associated RAS system dysregulation (17).

AKI in patients with viral pneumonia has been previously reported in hospitalized patients, the reason for which are many (5,6). Our case was a case of viral pneumonia who presented to us with AKI which is a rare presentation. There have however been previous reports of rhabdomyolysis in viral pneumonia who developed AKI (18, 19). These have been reported to occur due to immunological factors (20). Although adenovirus has been associated with rhabdomyolysis, our patient had normal CPK levels.

Conclusion

The diagnosis of CAP because of viruses is sometimes delayed because of atypical presentation and limited role of clinical laboratory findings. Our patient presented to us with AKI which resolved with supportive treatment.

REFERENCES

1. Jain V, Vashisht R, Yilmaz G, Bhardwaj A. StatPearls [Internet]. StatPearls Publishing; Treasure Island (FL): Jul 31, 2023. Pneumonia Pathology.
2. Mahashur A. Management of lower respiratory tract infection in outpatient settings: Focus on clarithromycin. Lung India. 2018 Mar 1;35(2):143-9.
3. Shin EJ, Kim Y, Jeong JY, Jung YM, Lee MH, Chung EH. The changes of prevalence and etiology of pediatric pneumonia from National Emergency Department Information System in Korea, between 2007 and 2014. Korean journal of pediatrics. 2018 Sep;61(9):291.
4. Bozio CH, Flanders WD, Finelli L, Bramley AM, Reed C, Gandhi NR,et al. Use of multiple imputation to estimate the proportion of respiratory virus detections among patients hospitalized with community-acquired pneumonia. In Open forum infectious diseases 2018 Apr (Vol. 5, No. 4, p. ofy061). US: Oxford University Press.
5. Bellomo R, Kellum JA, Ronco C. Acute kidney injury. The Lancet. 2012 Aug 25;380(9843):756-66.

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024

6. Kaaviya R, Vadivelan M, Balamurugan N, Parameswaran S, Thabah MM. Community acquired AKI: a prospective observational study from a tertiary level hospital in Southern India. Indian Journal of Nephrology. 2019 Jul 1;29(4):254-60.
7. Darden DB, Hawkins RB, Larson SD, Iovine NM, Prough DS, Efron PA. The clinical presentation and immunology of viral pneumonia and implications for management of coronavirus disease 2019. Critical care explorations. 2020 Apr 1;2(4):e0109.
8. Jain S. Epidemiology of viral pneumonia. Clinics in chest medicine. 2017 Mar 1;38(1):1-9.
9. Shorr AF, Zilberberg MD, Micek ST, Kollef MH. Viruses are prevalent in non-ventilated hospital-acquired pneumonia. Respiratory medicine. 2017 Jan 1;122:76-80.
10. Yoon BW, Song YG, Lee SH. Severe community-acquired adenovirus pneumonia treated with oral ribavirin: a case report. BMC Research Notes. 2017 Dec;10:1-4.
11. Percopo CM, Dyer KD, Ochkur SI, Luo JL, Fischer ER, Lee JJ, Lee NA, Domachowske JB, Rosenberg HF. Activated mouse eosinophils protect against lethal respiratory virus infection. Blood, The Journal of the American Society of Hematology. 2014 Jan 30;123(5):743-52.
12. Hermesh T, Moltedo B, Moran TM, López CB. Antiviral instruction of bone marrow leukocytes during respiratory viral infections. Cell host & microbe. 2010 May 20;7(5):343-53.
13. Davey Jr RT, Lynfield R, Dwyer DE, Losso MH, Cozzi-Lepri A, Wentworth D, Lane HC, Dewar R, Rupert A, Metcalf JA, Pett SL. The association between serum biomarkers and disease outcome in influenza A (H1N1) pdm09 virus infection: results of two international observational cohort studies. PloS one. 2013 Feb 27;8(2):e57121.
14. Rodriguez-Ramirez HG, Salinas-Carmona MC, Barboza-Quintana O, Melo-de la Garza A, Ceceñas-Falcon LA, Rangel-Martinez LM, Rosas-Taraco AG. CD206+ cell number differentiates influenza A (H1N1) pdm09 from seasonal influenza A virus in fatal cases. Mediators of Inflammation. 2014 Jan 1;2014.
15. Yoo JK, Kim TS, Hufford MM, Braciale TJ. Viral infection of the lung: host response and sequelae. Journal of allergy and clinical immunology. 2013 Dec 1;132(6):1263-76.
16. Pang IK, Iwasaki A. Inflammasomes as mediators of immunity against influenza virus. Trends in immunology. 2011 Jan 1;32(1):34-41.
17. Ning Q, Wu D, Wang X, Xi D, Chen T, Chen G, Wang H, Lu H, Wang M, Zhu L, Hu J. The mechanism underlying extrapulmonary complications of the coronavirus disease 2019 and its therapeutic implication. Signal Transduction and Targeted Therapy. 2022 Feb 23;7(1):57.
18. Fadila MF, Wool KJ. Rhabdomyolysis secondary to influenza a infection: a case report and review of the literature. North American journal of medical sciences. 2015 Mar;7(3):122.
19. Jha VK, Akal RS, Singh BP, Walia GK, Tejesh BS, Mahapatra D. Rhinovirus Pneumonia, Rhabdomyolysis-Induced Acute Kidney Injury, and Post-Viral Forme Fruste Lupus. Indian Journal of Nephrology.:10-4103.
20. Quaglia M, Merlotti G, De Andrea M, Borgogna C, Cantaluppi V. Viral infections and systemic lupus erythematosus: new players in an old story. Viruses. 2021 Feb 11;13(2):277.

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024