

Spontaneous Pneumothorax post Chickenpox eruptions: A Case Report

¹Sushant Satya Priya, Senior Resident, Department of Anaesthesia, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India.

²Amit Kumar Das, Associate Professor, Department of Medicine, Narayan Medical College and Hospital, Sasaram, Bihar, India.

Corresponding Author: Amit Kumar Das, Associate Professor, Department of Medicine, Narayan Medical College and Hospital, Sasaram, Bihar, India.

How to citation this article: Sushant Satya Priya, Amit Kumar Das, “Spontaneous Pneumothorax post Chickenpox eruptions: A Case Report”, IJMACR- July – August - 2022, Vol – 5, Issue - 4, P. No. 244 - 247.

Copyright: © 2022, Sushant Satya Priya, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License 4.0. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

The varicella zoster virus, which causes Varicella (chickenpox), is a widespread, self-limiting viral infection (VZV). The effects of chickenpox are generally mild in children between the ages of 2 and 8 years, but they can be very serious in adults.

Keywords: Chickenpox, Secondary Pneumothorax, VZV Infection, VZ Pneumonia, Primary Spontaneous Pneumothorax

Introduction

The most common complication of adult varicella infection is pneumonia, which can lead to respiratory failure. Following varicella pneumonia infection in adult patients, pneumothorax is a rare consequence. The formation of pneumothorax brought on by VZV Inflammation brought on by pneumonia has been linked to the rupture of sub-pleural necrotic nodules or the rupture of pre-existing blebs. However, reports of

spontaneous pneumothorax in varicella are relatively rare.

Case Report

A previously healthy 18-year-old male (Table 1) appeared 7 days after having a fever and body rashes with sudden onset right-sided pleuritic chest pain and trouble breathing.

Table 1: Sociodemographic characteristics of the patient

Sociodemographic/ Clinical Characteristics	Patient Characteristics
Age	18
Gender	Male
Ethnicity	Indian
Occupation	Student
Smoking status	Non -Smoker

He experienced fever, malaise, and a generalised macular skin rash five days before being admitted. The rash quickly developed into vesicles, pustules, and crust

development. A colleague who had chicken pox and was still ill as well as another colleague who had recovered had a positive history of exposure to two sick contacts. There was no history of trauma, pneumothorax, or chronic obstructive pulmonary disease in the past. The patient had never smoked before.

The patient was febrile when they arrived, with a temperature of 38.2°C and a SpO₂ of 94% on room air. His respiration rate was 32 breaths per minute, his pulse was 92, and his blood pressure was 110/70 mm Hg. Upon physical examination, a diffuse vesiculopustular skin rash with crusts was found. A closer look at the chest indicated that the right upper lung region had reduced breath sounds. The systemic evaluation was unremarkable after that. The renal, hepatic, blood coagulation, and blood cell count were all within normal limits. A small right sided pneumothorax measuring 2 cm at the hilum was found on a chest x-ray (Figure 1(a)). No signs of concurrent pneumonia or modifications indicative of chronic obstructive pulmonary disease were present.

Intercostal drainage (ICD) was put in the left lung's anterior axillary line in the fourth intercostal gap while the patient was under local anaesthetic in the emergency procedure room (Figure 2). After the water column's movement was confirmed, the ICD was repaired. The patient was given oral diclofenac for pain relief, high flow oxygen, and famciclovir 500 mg every eight hours. Serial x-rays taken during his hospital stay did not reveal any worsening of the right-sided pneumothorax. On day 2, a chest x-ray (Figure 1(b)) showed that the pneumothorax had shrunk in size. On the third day after being admitted, the patient demonstrated clinical improvement and remained stable. For information on the patient's sociodemographics, refer to Table 1.

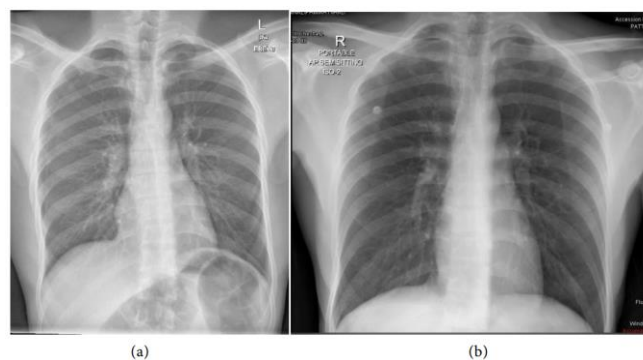


Figure 1: (a) Showing chest radiograph (PA view) upon admission revealing right-sided mild to moderate pneumothorax; (b) Showing chest radiograph (PA view) upon discharge with a reduction in size of small right-sided pneumothorax.

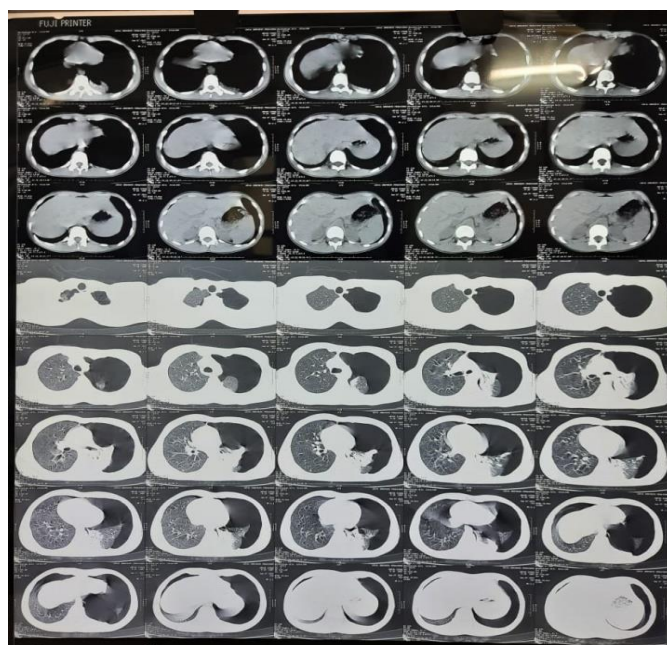


Figure 2: CT Thorax

Discussion

The major significant complication of adult varicella is pneumonia, which can result in respiratory failure. Risk factors linked to the development of varicella pneumonia include cigarette smoking [1] [2] [3], pregnancy [4], immunosuppression [5], and male sex [6].

Dry cough, progressive dyspnea, and tachypnea are the most common symptoms of varicella pneumonia, which

normally develops slowly over the course of one to six days after the rash first appears.

In some cases, prompt intravenous acyclovir therapy has been linked to clinical improvement and pneumonia resolution [7] [8] [9]. A rare consequence in adult patients with varicella pneumonia is pneumothorax. A primary spontaneous pneumothorax (PSP) develops in a person without a known lung disease without a precipitating event. Factors that have been proposed or shown to predispose patients to primary spontaneous pneumothorax (PSP) include smoking, family history, Marfan syndrome, homocystinuria, and thoracic endometriosis [10] [11] [12] [13] [14].

Contrarily, a pneumothorax that develops as a side effect of an underlying lung condition is referred to as a secondary spontaneous pneumothorax. The most frequent associated conditions are necrotizing pneumonia, cystic fibrosis, primary or metastatic lung malignancy, chronic obstructive pulmonary disease, and cystic fibrosis. (e.g., bacterial, or fungal pneumonia, Pneumocystis jirovecii pneumonia, and tuberculosis) [10] [15].

The development of pneumothorax brought on by VZV Inflammation brought on by pneumonia has been linked to the rupture of sub-pleural necrotic nodules or the rupture of pre-existing blebs.

Although the exact prevalence is unknown, VZV pneumonia and smoking are associated with the majority of secondary pneumothorax occurrences. But sometimes, neither an examination nor radiological results can establish the existence of underlying pneumonia [16]. In our situation, the existence of varicella pneumonia could not be clinically confirmed, so we made the diagnosis of pneumothorax due to varicella pneumonia because it is linked to the disease's

usual skin lesions. Although an outpatient CT scan of the thorax was planned because the patient was stable, we unfortunately lost track of him when he left for his native country. Up to our knowledge, it is extremely rare to have such complication of VZV infection without underlying pneumonia or chronic lung disease. Physicians need to be aware of this potentially fatal pulmonary event and should include it as yet another possible complication of chickenpox.

Conclusion

Regardless of the presence or absence of pneumonia, patients with an active varicella infection must rule out pneumothorax when they arrive with dyspnea and chest pain. A quick chest x-ray is required to rule out a spontaneous pneumothorax. If a patient is tall, elderly, a smoker, or has a history of spontaneous pneumothorax, specific precautions for a pneumothorax must be taken into account.

References

1. Fairley, C.K. and Miller, E. (1996) Varicella-Zoster Virus Epidemiology—A Changing Scene? The Journal of Infectious Diseases, 174, S314-S319. https://doi.org/10.1093/infdis/174.Supplement_3.S314
2. Triebwasser, J.H., Harris, R.E., Bryant, R.E. and Rhoades, E.R. (1967) Varicella Pneumonia in Adults: Report of Seven Cases and a Review of Literature. Medicine, 46, 409-423. <https://doi.org/10.1097/00005792-196709000-00003>
3. Ellis, M.E., Neal, K.R. and Webb, A.K. (1987) Is Smoking a Risk Factor for Pneumonia in Adults with Chickenpox? British Medical Journal, 294, 1002. <https://doi.org/10.1136/bmj.294.6578.1002>

4. Esmonde, T.F., Herdman, G. and Anderson, G. (1989) Chickenpox Pneumonia: An Association with Pregnancy. *Thorax*, 44, 812-815.
5. Fleisher, G., Henry, W., McSorley, M., et al. (1981) Life-Threatening Complications of Varicella. *American Journal of Diseases of Children*, 135, 896-899.
<https://doi.org/10.1001/archpedi.1981.02130340008004>
6. Weber, D.M. and Pellecchia, J.A. (1965) Varicella Pneumonia: Study of Prevalence in Adult Men. *The Journal of the American Medical Association*, 192, 572-573.
<https://doi.org/10.1001/jama.1965.03080190138035>
7. Schlossberg, D. and Littman, M. (1988) Varicella Pneumonia. *Archives of Internal Medicine*, 148, 1630-1632.
<https://doi.org/10.1001/archinte.1988.00380070114027>
8. Haake, D.A., Zakowski, P.C., Haake, D.L. and Bryson, Y.J. (1990) Early Treatment with Acyclovir for Varicella Pneumonia in Otherwise Healthy Adults: Retrospective Controlled Study and Review. *Reviews of Infectious Diseases*, 12, 788-798.
<https://doi.org/10.1093/clinids/12.5.788>
9. Wilkins, E.G., Leen, C.L., McKendrick, M.W. and Carrington, D. (1998) Management of Chickenpox in the Adult. A Review Prepared for the UK Advisory Group on Chickenpox on Behalf of the British Society for the Study of Infection. *Journal of Infection*, 36, 49-58. [https://doi.org/10.1016/S0163-4453\(98\)80155-2](https://doi.org/10.1016/S0163-4453(98)80155-2)
10. Sahn, S.A. and Heffner, J.E. (2000) Spontaneous Pneumothorax. *The New England Journal of Medicine*, 342, 868-874.
<https://doi.org/10.1056/NEJM200003233421207>
11. Gobbel Jr., W.G., Rhea Jr., W.G., Nelson, I.A. and Daniel, R.A. (1963) Spontaneous Pneumothorax. *The Journal of Thoracic and Cardiovascular Surgery*, 46, 331.
12. Lesur, O., Delorme, N., Fromaget, J.M., Polu, J.M. and Bernadac, P. (1990) Computed Tomography in the Etiologic Assessment of Idiopathic Spontaneous Pneumothorax. *Chest*, 98, 341-347.
<https://doi.org/10.1378/chest.98.2.341>
13. Bense, L., Lewander, R., Eklund, G., Hedenstierna, G. and Gösta Wiman, L. (1993) Nonsmoking, Non-Alpha1-Antitrypsin Deficiency-Induced Emphysema in Nonsmokers with Healed Spontaneous Pneumothorax, Identified by Computed Tomography of the Lungs. *Chest*, 103, 433-438.
<https://doi.org/10.1378/chest.103.2.433>
14. Hwong, T.M., Ng, C.S., Lee, T.W., et al. (2004) Video-Assisted Thoracic Surgery for Primary Spontaneous Hemopneumothorax. *European Journal of Cardio-Thoracic Surgery*, 26, 893-896.
<https://doi.org/10.1016/j.ejcts.2004.05.014>
15. Noppen, M. and De Keukeleire, T. (2008) Pneumothorax. *Respiration*, 76, 121-127.
<https://doi.org/10.1159/000135932>
16. Park, S.W., Kang, S.H., Lee, D., Wang, H.Y. and Sung, H.S. (2003) Pneumothorax Secondary to Ipsilateral Herpes Zoster Pectoralis. *Acta Dermato-Venereologica*, 83, 298-299.
<https://doi.org/10.1080/00015550310016616>