Medical Science

pISSN 2321–7359; eISSN 2321–7367

Simultaneous Bilateral Primary Spontaneous Pneumothorax (SBPSP) in a young male athlete: A rare presentation

Sagar VVSS[1]✉, **Sourya Acharya**[2], **Amol Andhale**[3], **Samarth Shukla**[4], **Sunil Kumar**[5], **Chitturi Venkata Sai Akhil**[6]

To Cite:
Sagar VVSS, Acharya S, Andhale A, Shukla S, Kumar S, Akhil CVS. Simultaneous Bilateral Primary Spontaneous Pneumothorax (SBPSP) in a young male athlete: A rare presentation. Medical Science, 2022, 26, ms70e2028.
doi: https://doi.org/10.54905/disssi/v26i120/ms70e2028

Author Affiliation:
[1]Resident, Department of General Medicine, Jawaharlal Nehru Medical College & Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India; Email: vvsssagar@gmail.com
[2]Professor and Head, Department of General Medicine, Jawaharlal Nehru Medical College & Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India; Email: souryaacharya74@gmail.com
[3]Senior Resident, Department of General Medicine, Jawaharlal Nehru Medical College & Acharya Vinobha Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India; Email: Dramoljnmc@gmail.com
[4]Professor, Department of Pathology, Jawaharlal Nehru Medical College & Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India; Email: samarth21174@gmail.com
[5]Professor, Department of General Medicine, Jawaharlal Nehru Medical College & Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India; Email: sunilkumarmed@gmail.com
[6]Resident, Department of Pediatrics, Jawaharlal Nehru Medical College & Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India; Email: me.akhilpandu@gmail.com

✉**Corresponding author**
Resident, Department of General Medicine, Jawaharlal Nehru Medical College & Acharya Vinoba Bhave Rural Hospital,
Sawangi (Meghe), Wardha, Maharashtra, India;
Email: vvsssagar@gmail.com

Peer-Review History
Received: 2 January 2022
Reviewed & Revised: 3/January/2022 to 14/February/2022
Accepted: 16 February 2022
Published: 19 February 2022

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

Simultaneous bilateral primary spontaneous pneumothorax (SBPSP) is a rare life threatening emergency. The majority of patients do not have any significant medical issues. Smoking, youth and male gender are associated risk factors. A 28 year old basketball player with no significant medical history who presented to this hospital with sudden onset breathlessness and after investigations diagnosed as bilateral spontaneous pneumothorax which was treated with bilateral intercostal tube drainage.

Keywords: Smoking, gender, intercostal drainage, pneumothorax

1. INTRODUCTION

Pneumothorax is a frightening medical emergency characterised by accumulation of air in cavity of pleura. The etiology can be attributed to spontaneous, traumatic and iatrogenic caused. The term spontaneous pneumothorax itself implies its occurrence without any history of trauma. The incidence was reported to be 1.2 to 28 cases/100,000 population (Favara et al., 1997). The presentation can be either primary or secondary. Primary spontaneous pneumothorax (PSP) can be labelled when hazardous elements such as smoking, young age and male gender without any other medical condition present (Watanabe et al., 2001). PSP usually occurs with rupture of subpleural apical blebs in an otherwise healthy lung. On the other hand secondary spontaneous pneumothorax is associated with a diseased lung commonly COPD and malignancy. Spontaneous pneumothorax involving both the lungs has been rarely reported. SBPSP is an unusual presentation with a least incidence (1%) among cases of spontaneous pneumothorax (Light, 1994). Spontaneous pneumothorax manifests with minimal to significant breathlessness which may progress to alarming tension pneumothorax leading to death. Prompt management helps to relieve the pneumothorax and improvement in the symptoms.

2. CASE REPORT

A 28 year young tall male of height 6'3 while playing basketball suddenly developed breathlessness, cough, chest discomfort, palpitations. Patient was taken to nearby local hospital where chest x ray revealed right sided pneumothorax (Figure 1).

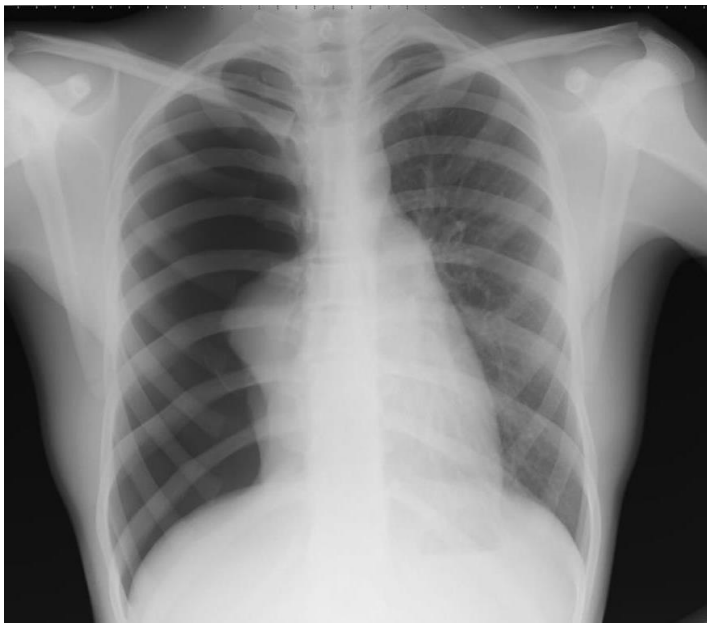

Figure 1 showing right sided pneumothorax with underlying collapse of right lung

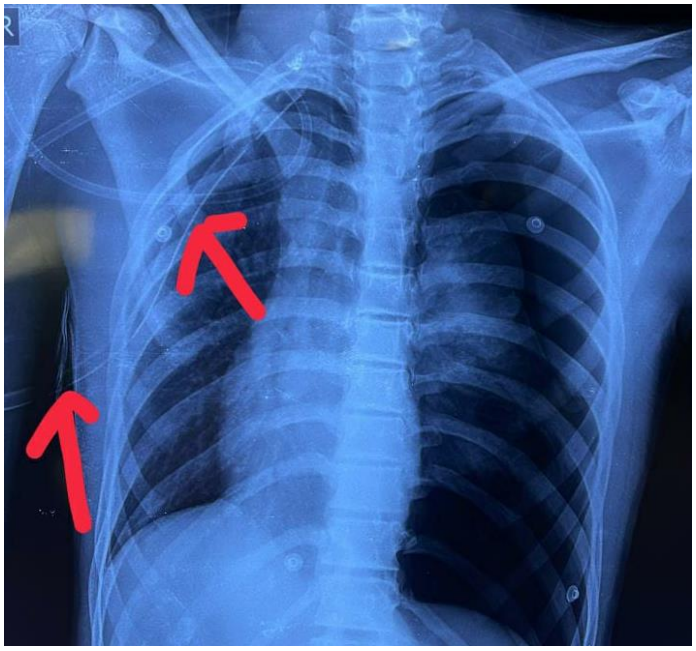

Figure 2 showing resolved right sided pneumothorax with intercostal chest drain in-situ and newly developed left sided pneumothorax

Patient was given oxygen support and needle thoracocentesis was done. There was no improvement in symptoms even after 15 minutes so; the patient was immediately shifted to this hospital for further management. On examination in this hospital, patient was in hypotension having blood pressure of 80 systolic and tachycardia 128/minute and tachypneic with respiratory rate 36/minute. On auscultation patient has decreased air entry on both sides, hyperresonant note on bilateral anterior chest. No significant abnormality detected on cardiovascular, abdominal, central nervous system examination. There were no stigmata of Marfanoid habitus. Chest x ray was done immediately suggestive of bilateral pneumothorax (Figure 2). HRCT thorax was done revealed moderate left side and mild right sided pneumothorax with bilateral apical blebs (Figure 3).

Figure 3 Axial section of HRCT thorax showing bilateral apical blebs

Hematological parameters were in normal limits. RT-PCR for SARS-CoV2 was negative. Patient was given oxygen support, fluid resuscitation and intercostal tube (Figure 4a and 4b) was inserted bilaterally to relieve pneumothorax. Later patient's lung expanded which was seen on chest x ray and hypotension improved.

Figure 4a showing right sided intercostal tube drainage

Figure 4b showing left sided intercostal tube drainage

3. DISCUSSION

The pleura is a thin, membrane covering that surrounds the lung tissue. The function of pleura is to restrict the passage of inhaled air from lung to pleural space. Blebs are air pockets that develop on lung surface and look like blisters. Blebs and bullae can be secondary to COPD, but especially blebs can also be detected in young, healthy persons who have no other medical problems. When air is inhaled, the flow of air from the airways into thoracic cavity leads to rupture (Graf-Deuel & Knoblauch, 1994). SBPSP has been found to occur in as few as 1.4 percent of cases to as many as 7.6% of cases (Rivas de Andrés et al., 2008). Trauma, tumours, subpleural blebs, COPD, and iatrogenic reasons have all been identified as causes of bilateral pneumothorax. Simultaneous spontaneous bilateral tension pneumothorax is characterised by no tracheal displacement and similar degree of lung collapse on both sides. Such patients frequently manifest hemodynamic instability and collapse, necessitating immediate decompression (Melton et al., 1979).

Although spontaneous pneumothorax is a common occurrence in clinical practice, SBSP is infrequently described in the literature. There is always an underlying pulmonary pathology in SBSP cases. The majority of SBSP cases are caused by a pulmonary condition like COPD, malignancy or TB. SBSP is occasionally caused by a pleural window that communicates with the bilateral pleural spaces. A history and thorough physical examination are helpful to detect pneumothorax, CXR or chest ultrasound take part in evaluation. A unique radiographic feature of the CXR is accumulation of gas between pleural layers (Kim, 2017). Acute breathlessness, chest discomfort, and decreased breath sounds are common signs and symptoms. Physical examination and radiological finding may be normal if the amount of air accumulation in pleural space is minimal. If left untreated, a spontaneous pneumothorax can quickly develop into a catastrophic tension pneumothorax. As a result, clinicians should always have a strong suspicion for this diagnosis and work-up.

According to Nakagawa et al., (2015) around 58 percent and 68 percent of BSP patients, respectively, had causal underlying pulmonary illness. Pulmonary metastases, TB, Ehlers Danlos disease, histiocytosis X, and COPD are among the illnesses linked to BSSP. BPSP is a type in which the patient has no underlying medical illness. The rupture of blebs in the lungs is the most prevalent recognised cause of the BPSP, even though the exact mechanism is still unknown. The primary goals of pneumothorax treatment are to achieve complete lung expansion and avoid recurrence. Various therapeutic choices are provided varying from monitoring to thoracotomy. Needle thoracocentesis, percutaneous catheter insertion, and intercostal drainage with or without pleurodesis, and video-assisted thoracoscopic surgery are some of them. A vicious cycle can develop, leading to a worsening of the situation, with a chain reaction of decreased venous return, preload, cardiac output, and so on (Lang-Lazdunski et al., 2003). Continuous air leaking

following intercostal tube placement, recurrent pneumothorax, simultaneous pneumothorax on both lungs, post-surgery pneumothorax, and pneumothorax with an occupational origin are all indications for surgical therapy of pneumothorax. Currently Video-Assisted Thoracic Surgery (VATS) is the most common surgical procedure performed for treating pneumothorax (Soccorso et al., 2015).

In this case patient was young tall male having no past significant lung pathology or any other risk factors. Etiological factor in this case can be due to rupture of blebs which were evident on HRCT thorax. Patient improved with bilateral intercostal drain insertion and other modalities of treatment were necessitated. In two weeks patient was clinically improved and intercostal tube removed and discharged.

4. CONCLUSION

SBPSP is an unusual life threatening medical emergency which needs prompt diagnosis and rapid intervention which helps to curtail mortality. Bilateral tube thoracostomy has offered promising results leading to improved clinical condition and better prognosis.

Acknowledgement

We thank all the contributors involved in this study.

Author Contributions

VVSSS and SA had initiated the idea of publication and contributed to the development of manuscript.

AA & CVSA helped in acquisition of data.

SS and SK helped to revise the article critically for important intellectual content.

Informed consent

Written and oral consent was obtained from the participant involved in the study.

Funding

This study has not received any external funding.

Conflict of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Favara BE, Feller AC, Pauli M, Jaffe ES, Weiss LM, Arico M, Bucsky P, Egeler RM, Elinder G, Gadner H, Gresik M, Henter JI, Imashuku S, Janka-Schaub G, Jaffe R, Ladisch S, Nezelof C, Pritchard J. Contemporary classification of histiocytic disorders. The WHO Committee On Histiocytic/Reticulum Cell Proliferations. Reclassification Working Group of the Histiocyte Society. Med Pediatr Oncol 1997; 29(3):157-66. doi: 10.1002/(sici)1096-911x(199709)29:3<157::aid-mpo1>3.0.co;2-c. PMID: 9212839.
2. Graf-Deuel E, Knoblauch A. Simultaneous bilateral spontaneous pneumothorax. Chest 1994; 105(4):1142-6. doi: 10.1378/chest.105.4.1142. PMID: 8162740.
3. Kim KS. Single-staged uniportal VATS in the supine position for simultaneous bilateral primary spontaneous pneumothorax. J Cardiothorac Surg 2017; 12, 25. https://doi.org/10.1186/s13019-017-0591-7
4. Lang-Lazdunski L, Chapuis O, Bonnet PM, Pons F, Jancovici R. Videothoracoscopic bleb excision and pleural abrasion for the treatment of primary spontaneous pneumothorax: Long-term results. Ann Toracic Surg 2003; 75, no. 3, pp. 960–965.
5. Light RW. Pneumothorax in: Murray JF (ed) volum 2. Textbook of Respiratory Medicine. WB Saunders, Philadelphia, 1994; pp. 2193-208
6. Melton LJ 3rd, Hepper NG, Offord KP. Incidence of spontaneous pneumothorax in Olmsted County, Minnesota: 1950 to 1974. Am Rev Respir Dis 1979; 120(6):1379-82. doi: 10.1164/arrd.1979.120.6.1379. PMID: 517861.
7. Nakagawa H, Wada H, Hajiro T, Nagao T, Ogawa E, Hatamochi A, Tanaka T, Nakano Y. Ehlers-Danlos syndrome type IV with bilateral pneumothorax. Inter Med 2015; 54, no. 24, pp. 3181–3184.

8. Rivas de Andrés JJ, Jiménez López MF, LópezRodó LM, Trullen AP, Lanzas JT. Guideline for the diagnosis and treatment of spontaneous pneumothorax. Arch Bronconeumol 2008; 44: 437-48.
9. Soccorso G, Anbarasan R, Singh M, Lindley RM, Marven SS, and Parikh DH. Management of large primary spontaneous pneumothorax in children: radiological guidance, surgical intervention and proposed guideline. Pediat Surg Int 2015; 31, no. 12, pp. 1139–1144.
10. Watanabe R, Tatsumi K, Hashimoto S, Tamakoshi A, Kuriyama T. Respiratory Failure Research Group of Japan. Clinico-epidemiological features of pulmonary histiocytosis X. Intern Med 2001; 40(10):998-1003. doi: 10.2169/internal medicine.40.998. PMID: 11688843.