

The role of phases of the moon in the development of spontaneous pneumothorax

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The moon phase at the time of onset of spontaneous pneumothorax (SP) was the subject of a retrospective analysis of patients with a first or recurrent non-traumatic SP episode treated at the Department of Thoracic Surgery, University Medical Centre Ljubljana. The study included a total of 244 patients, of whom 43% were less than 30 years of age. SP occurred with an increased frequency at last quarter (87 cases, $p < 0.01$) and was less common at new moon (38 cases, $p < 0.01$). The influence of the moon phase on occurrence of SP was more pronounced in women than in men; it was also more evident in patients less than 30 years of age than in older individuals.

Key words: pneumothorax; moon

Introduction

The etiology of spontaneous pneumothorax (SP) is unknown. The most likely pathoanatomical substrate is a subpleural bleb or emphysematous bulla of the lung.¹⁻³ The development of SP is related to air pressure changes. There are minimal but frequent air pressure falls occurring as a result of weather change.⁴⁻⁶ Scott and co-workers⁶ have concluded that factors other than frequent air pressure falls must play a part in the development of SP. The phase of the moon may be one of them. While treating patients with SP we got the impression that SP incidents were unusually frequent at certain phases of the moon. In a retrospective study

we wished to verify this impression and estimate in an objective manner whether the moon phase does or does not have an effect on the occurrence of SP.

Patients and methods

A retrospective study was carried out on patients with SP treated at the Department of Thoracic Surgery, University Medical Centre Ljubljana. The study group included patients with first and recurrent SP episodes. Patients with a traumatic or iatrogenic pneumothorax, cases of pneumothorax occurring in infants and cases established on follow-up examination a week after treatment of a pneumothorax episode were excluded from analysis. The time of hospital admission did not always correspond to the time of SP onset. The criteria for inclusion in the survey required that the patient was on the territory of Slovenia when he developed

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SP, and that the available history data allowed precise determination of the day and hour of its onset.

The study group consisted of 244 patients treated between January 1970 and December 1989. There were 41 women and 203 men; 198 patients had a first SP, while 46 had a second or further recurrence; 43 % of the patients were under 30 years of age. SP cases that developed in the intermediate period between two moon phases were allocated to the one that was temporally closer. The Chi square test was used for statistical analysis of the results. A uniform distribution of SP incidents throughout the year was presumed. Thus, 25 % of cases were expected to occur during each of the four moon phases.

Results

SP occurrence during individual moon phases is presented in Figure 1. SP occurred with the highest frequency at last quarter and had the lowest frequency at new moon ($p < 0.01$). This applies only to a first SP but not to recurrences ($p > 0.05$). The influence of the last quarter

on SP occurrence was more pronounced in women than in men, but the difference was statistically insignificant ($p > 0.05$) (Figure 2). The relationship between the patient's age and the moon phase at the time of SP onset is presented in Figure 3. Patients under 30 years of age were significantly more susceptible to the effect of the moon phase ($p < 0.01$) than older patients, in whom this effect was statistically insignificant ($p > 0.05$).

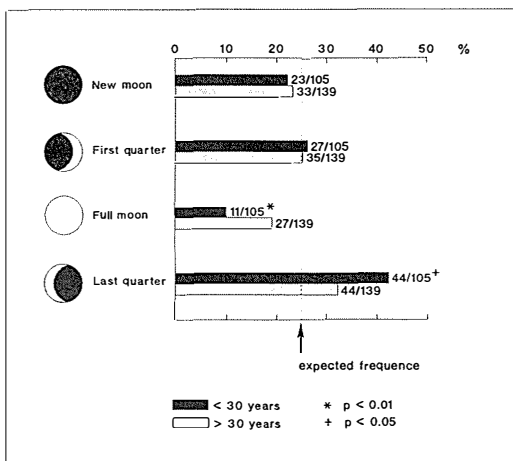


Figure 2. Phases of the moon and age of patients with SP.

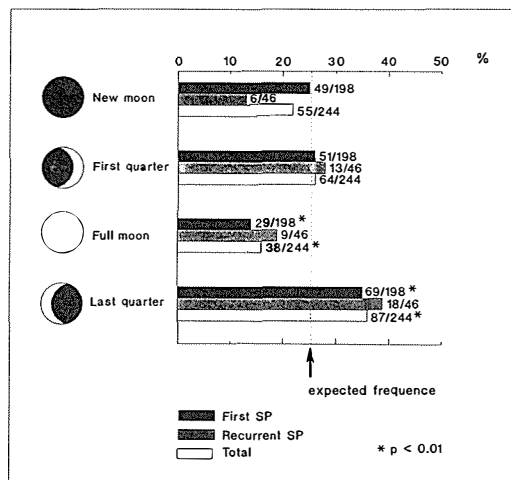


Figure 1. Phases of the moon and number of SP events.

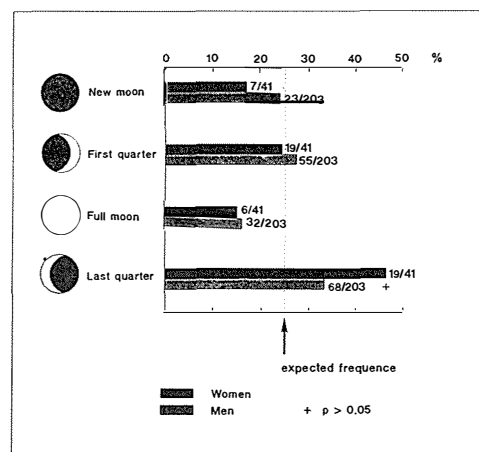


Figure 3. Sex of patients and relative number of SP at each moon phase.

Discussion

To our knowledge, an association between a specific moon phase and the development of SP has not been described. In fact, there is no evidence to support involvement of the moon in any physiologic or pathologic state in man, although according to popular belief, it affects all human conditions. The moon with its phases may, however, exert an influence on man by gravitation, as it affects the tide. The gravitational force in the erect human posture has been described as a potential factor precipitating the development and rupture of subpleural blebs and bullae in the upper lung lobes close to the apex.^{7,8}

Also the development of catamenial SP is unclear.⁹ The temporal distribution of SP events observed in our study suggests that women are more susceptible to the influence of the moon than men. Considering that also the menstrual cycle and the duration of pregnancy in woman are related to the lunar month, our present findings may open a new perspective on the problem of catamenial SP.

References

1. Lichter I, Gwyanne JF. Spontaneous pneumothorax in young subjects. A clinical and pathological study. *Thorax* 1971; **26**: 409–17.
2. Ohata M, Suzuki H. Pathogenesis of spontaneous pneumothorax with special reference to the ultrastructure of emphysematous bullae. *Chest* 1980; **77**: 771–6.
3. Melton LJ, Hepper NGG, Offord KP. Influence of height on the risk of spontaneous pneumothorax. *Mayo Clin Proc* 1981; **56**: 678–882.
4. Bense L. Spontaneous pneumothorax related to falls in atmospheric pressure. *Eur J Respir Dis* 1984; **65**: 544–6.
5. Garcia CJA, Hernandez CMA, Rego FG, Bustillo FE. Association between falls in atmospheric pressure and spontaneous pneumothorax (letter). *Eur J Respir Dis* 1985; **66**: 230.
6. Scott GC, Berger R, Mckean HE. The role of atmospheric pressure variation in the development of spontaneous pneumothoraces. *Am Rev Respir Dis* 1989; **139**: 659–62.
7. Kawakami Y, Irie T, Kamishima K. Stature, lung height, and spontaneous pneumothorax. *Respiration* 1982; **43**: 35–40.
8. Fishman AP. The normal pulmonary circulation. In: Fishman AP, ed. *Pulmonary disease and disorders*. New York: Hill McGraw, 1988: 975–96.
9. Lillington GA, Mitchell SP, Wood GA. Catamenial pneumothorax. *JAMA* 1972; **219**: 1328–30.