

CASE REPORT

Tetraplegia: Beyond Neuromuscular Respiratory Dysfunction

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ABSTRACT

In developing countries like India, tuberculosis (TB) is responsible for 30 to 80% of all pleural effusions encountered and may complicate TB in 31% of all cases. Among the extrapulmonary presentations, pleural TB is second in frequency after tubercular lymphadenitis. Here, we present the case of a 46-year-old lady with high-level spinal cord injury (SCI), who came to the outpatient department for regular follow-up. She had no specific complaints; however, respiratory system examination revealed decreased breath sounds and on further probing, patient revealed that she had mild breathlessness of 2-day duration. She had no history of contact with TB. On evaluation, she had left-sided pleural effusion; pleural tap was done, which showed increased number of cells with lymphocytosis and mildly elevated adenosine deaminase (ADA). The diagnosis of extrapulmonary TB was made and anti-TB therapy (ATT) (direct observation of drug intake (DOTS) category 1) was started.

Conclusion: Tuberculosis is a common infection in a developing country like India. All cases of breathlessness in a tetraplegic are not due to neuromuscular respiratory dysfunction.

Keywords: Spinal cord injury, Tetraplegia, Tuberculosis.

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INTRODUCTION

The higher and more complete the motor level of injury in a tetraplegic is, the greater is the respiratory muscle impairment.

Respiratory dysfunction and related diseases, such as pneumonia, which can be complicated by septicemia or pulmonary emboli, are common causes of death in SCI.¹

Further information about breathlessness in SCI was provided by Grandas et al, who studied dyspnea during activities of daily living in SCI.²

However, all cases of breathlessness in a tetraplegic should not be attributed to neuromuscular respiratory dysfunction.

Tuberculosis is one of the commonest infections worldwide. The average prevalence of all forms of TB in India in 2004 was estimated to be 5.05 per 1,000, prevalence of smear-positive cases 2.27 per 1,000, and average annual incidence of smear-positive cases at 84 per 100,000 annually.³

Tuberculous pleurisy occurs in approximately 30% of patients with TB.⁴

CASE REPORT

A 46-year-old lady with high-level (C4) complete SCI of a 5-year duration came to the outpatient clinic for regular follow-up. She had no specific complaints; however, respiratory system examination revealed decreased breath sounds, and on further probing, patient revealed that she had mild breathlessness of a 2-day duration. She had no history of contact with TB, loss of weight, or evening rise of temperature. On evaluation, she had left-sided pleural effusion; evaluation of gastrointestinal system revealed splenomegaly; pleural tap was done, which showed increased number of cells with lymphocytosis and mildly elevated ADA. Pleural biopsy was not done. The diagnosis of extrapulmonary TB was made and ATT was started.

INVESTIGATIONS

As on 10.10.15: Hemoglobin 10.5 mg/dL, TC (total count) 2.95 cells per microliter (mcL)). DC: N 87%, L 7.8%; Platelet Count 1.6 lakhs; Blood Urea Nitrogen-10 mg/dL; Creatinine- 0.28 mg/dL, Serum Electrolyte: Sodium- 13 mmol/L, Potassium- 4.34 mmol/L, Chloride-98 mmol/L; Liver Function test (LFT)- Total Protein 5.9 mg/dL, Albumin 2.8 mg/dL, Total Bilirubin 0.79 mg/dL, Direct 0.13 mg/dL, Aspartate aminotransferase 85 U/l, Alanine transaminase 37 U/l, Alkaline Phosphatase 67 U/l, Gammaglutamyl transferase 20 U/l

Pleural fluid: Total Count- 1600- Neutrophil 5%/ Lymphocyte 95%; Glucose 128 mg/dL, Adenosine deaminase (ADA) 32.40 U/l, Amylase 61/Lactate dehydrogenase 197; Protein 4.30 mg/dL; Albumin 2.40 mg/dL, No malignant cells.

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Acid-fast bacillus: Negative culture sensitivity – no growth.

Human immunodeficiency virus and HBsAg screening – negative.

Chest X-ray: Massive pleural effusion on left side.

Abdominal and chest scan: Mild splenomegaly/nonobstructive right renal calculus/mild left pelvicaliectasis/left pleural effusion.

TREATMENT

A 5-day course of Injection augmentin was given empirically suspecting lower respiratory tract infection.

The diagnosis of extrapulmonary TB was made and ATT, according to Revised National Tuberculosis Control Program (RNTCP) guidelines for extrapulmonary TB (2H3R3Z3E3 + 4H3R3), was started.

A total of 1,800 mL of pleural fluid was removed over 3 days. Her symptoms improved after the tap. She was referred to DOTS center of St. John's Medical College and first dose of ATT given. She was given the address of the local DOTS center near her house to continue the therapy. The need to complete a 6-month course was explained and reinforced.

DISCUSSION

Many studies have investigated the usefulness of measuring different parameters in pleural fluid for an early diagnosis of tuberculous pleurisy.

It has been shown that the most useful diagnostic tests are the levels of ADA and interferon gamma in the pleural fluid.

Elevation of either of these compounds in the lymphocytic pleural effusions is virtually diagnostic of tuberculous pleurisy.

Although, theoretically, detection of mycobacterial deoxyribonucleic acid in the pleural fluid by the polymerase chain reaction would appear to be useful, the usefulness of this test still needs further demonstration.

Patients with tuberculous pleurisy must receive ATT.

The current recommendation for immunocompetent patients is a 6-month regimen of isoniazid and rifampin supplemented in the first 2 months by pyrazinamide.⁴

CONCLUSION

In a tetraplegic, breathlessness occurs even while performing activities of daily living, such as talking, eating, dressing, or undressing due to the associated respiratory neuromuscular dysfunction.

However, all cases of breathlessness in a tetraplegic should not be attributed to neuromuscular respiratory dysfunction.

REFERENCES

1. Brown R, DiMarco AF, Hoit JD, Garshick E. Respiratory dysfunction and management in spinal cord injury. *Respir Care* 2006 Aug;51(8):853-870.
2. NF Grandas et al. Dyspnea During Daily Activities in Chronic Spinal Cord Injury. *Arch Phys Med Rehabil* 2005 Aug; 86(8):1631-1635.
3. Chakraborty AK. Epidemiology of tuberculosis: current status in India. *Indian J Med Res* 2004 Oct;120(4):248-276.
4. Ferrer Sancho J. Pleural tuberculosis: incidence, pathogenesis, diagnosis, and treatment. *Curr Opin Pulm Med* 1996 Jul; 2(4):327-334.