CASE REPORT

Filarial hydropneumothorax: a strange journey

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SUMMARY

Filarial infection can have varied manifestations, but hydropneumothorax at presentation has not yet been reported. A 28-year-old man presented to our hospital with heaviness of the left chest for the past 10 days, which was preceded by a sudden, short stabbing pain in the left chest after straining. Chest X-ray revealed left-sided hydropneumothorax. A peripheral blood picture revealed significant eosinophilia. A pleural fluid report also showed eosinophilia and a few motile microfilaria of *Wuchereria bancrofti*. Microfilaria was also documented in peripheral blood. There was no evidence of other organ system involvement. The patient was diagnosed with 'Filari al Hydropneumothorax'. After treatment with a temporary chest drain and oral diethylcarbamazine citrate, there was dramatic relief of symptoms and radiological improvement. The patient has been symptom free with no features of recurrence through 8 months of follow-up.

BACKGROUND

Lymphatic filariasis (LF) caused by *Wuchereria bancrofti* and *Brugia malayi* is an important public health problem in India.¹ LF is a disease of the poor and underprivileged.² It is a cause and effect of poverty.³ The majority of people at risk of filariasis live in rural areas. Of the three parasites causing LF, *W. bancrofti* accounts for over 90% of the global burden. India contributes about 40% of the total global burden and accounts for about 50% of those at risk of infection. *W. bancrofti* is the predominant species, accounting for about 98% of the national burden, widely distributed in 17 states and six union territories.³ Filari al infection can lead to a variety of clinical manifestations, including acute adenolymphangitis, with fever and swelling of the legs, arms, or male genital organ; or with repeated acute attacks, development of lymphoedema of the limbs, and hydrocoele, among many others. However, even after using various search options (eg, PubMed, Google Scholar) we could not find any case report of filari al hydropneumothorax.

CASE PRESENTATION

An unemployed 28-year-old man presented with a history of a sudden stabbing chest pain on the left side after straining, lasting for 1–2 h, followed by heaviness of the left chest for the past 10 days. He had no history of diabetes mellitus, tuberculosis infection or contact with a tuberculosis patient; and there was no history of physical trauma. He was a heavy smoker and an alcoholic. On examination, his blood pressure and temperature were normal.

There was absent breath sound below the fourth intercostal space in the left chest, along with positive shifting dullness and succussion splash, suggestive of left-sided hydropneumothorax. The remaining physical findings were unremarkable. There was no evidence of hepatosplenomegaly, pedal oedema, lymphadenopathy, scrotal swelling or tenderness.

INVESTIGATIONS

Laboratory tests on multiple occasions showed peripheral blood eosinophilia (22% and 28%); the rest of the haemogram was within normal limits. Pleural fluid test showed exudative effusion with protein level of 7.4 g/dl (serum protein level was 7.3 g/dl); lactate dehydrogenase level of 3911 mg/dl (serum lactate dehydrogenase level was 568 mg/dl), with high red blood cell count (3 400 000/cmm) and, again, eosinophilia (70%, total white cell count being 4500/cmm). A few motile microfilaria were also found in pleural fluid samples with their quite characteristic graceful sweeping curves (video 1). Microfilariae were also demonstrated in midnight peripheral blood samples. The microfilariae in peripheral blood (figure 1) and pleural fluid (figure 2) showed a well-defined sheath with nuclei extending up to the sharp tail tip. All features were suggestive of *W. bancrofti* microfilariae. The chest X-ray (figure 3) and CT scan (figure 4) showed left hydropneumothorax.

No pathology was found on ultrasonography of the scrotum. Routine and microscopic examinations of urine were normal. We diagnosed the patient as a case of 'Filari al Hydropneumothorax' without any other tissue involvement by *W. bancrofti*.

Video 1 Characteristic graceful sweeping curves in the motile organisms in pleural fluid samples.

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Figure 1 Microfilaria in peripheral blood.

DIFFERENTIAL DIAGNOSIS

In the differential diagnosis, we included those aetiologies commonly causing hydropneumothorax in India, such as tuberculosis, lung carcinoma, pleural malignancy, penetrating chest trauma and infectious aetiologies other than tuberculosis, for example, *Staphylococcus*, which were ruled out by history, clinical examination, and demonstration of microfilaria in peripheral blood and pleural fluid.

TREATMENT

Treatment was initiated with a temporary chest drain insertion and oral diethylcarbamazine citrate (100 mg three times per day).

OUTCOME AND FOLLOW-UP

There was dramatic relief of symptoms. Within 3 days, the respiratory symptoms were alleviated to a great extent. Radiological improvement was also noted within 5 days, with

Figure 2 Microfilaria in pleural fluid.

Figure 3 Chest X-ray showing hydropneumothorax.

resolution of the hydropneumothorax. The patient was discharged after 10 days. Serial chest X-rays on subsequent visits showed resolution of the hydropneumothorax. The patient has been symptom free with no features of recurrence through 8 months of follow-up (figure 5).

DISCUSSION

LF is a vector-borne disease spread by filarial worms. These worms invade the lymphatics of humans, initiating pathological changes leading to later filarial disease manifestations, most commonly by *W. bancrofti* (90%).⁴ The vectors are *Anopheles*, *Culex* and *Aedes* spp (the *Anopheles* spp are the least and *Culex* spp the most efficient).⁵

Unlike lymphatic disease syndromes, the extralymphatic manifestations of Bancroftian filariasis are not caused by adult worms per se, but by microfilariae, through diffusible products from as yet undefined parasite stages, or by immune complexes.⁶ In the lungs, a common manifestation is tropical pulmonary eosinophilia (TPE), which results from a hypersensitivity response to the microfilariae in the lymphatic system.^{7 8} In TPE, peripheral blood tests reveal eosinophilia $>3000/\text{mm}^3$, but absence of microfilariae.⁹

Microfilaria have been identified in samples submitted for cytological examination, such as aspirated material from lymph nodes, breast lumps and cutaneous swellings, and also from bone marrow, bronchial aspirate, nipple discharge, ascitic, pleural and pericardial fluid, ovarian cyst fluid and cervicovaginal smears.^{10 11} Hydropneumothorax is a yet unreported manifestation. However, in our case report, the patient presented with feature suggestive of hydropneumothorax; we showed actively motile microfilaria in pleural fluid along with pleural fluid and peripheral blood

Figure 4 CT of the chest showing hydropneumothorax.

eosinophilia. In India, the predominant underlying cause of pneumothorax is pulmonary tuberculosis.¹² Sputum examination for acid-fast bacilli on two consecutive days and mantoux test were carried out to exclude tuberculous etiology. Both tests were negative.

There have been few case reports where microfilariae have been detected in association with malignancy.^{13–15} The presence of microfilariae along with neoplasms is generally regarded as a chance association.¹⁶ For our patient, the pap smear came to be negative for the pleural fluid. Also, the chest X-ray and CT of the chest did not reveal any additional lung pathology. So, after excluding other causes, we considered *Wuchereria* spp as the aetiological factor here.

Learning points

- ▶ Hydropneumothorax can be the sole presentation of filarial infection.
- ▶ A high degree of suspicion for filariasis should be kept in mind in endemic filarial regions during evaluation of hydropneumothorax.
- ▶ Response to diethylcarbamazine citrate (DEC) is dramatic and complete remission occurs.
- ▶ A course of DEC may be tried in eosinophilic pleural effusion of apparently unknown aetiology.

Figure 5 Chest X-ray after resolution of hydropneumothorax.

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Competing interests None declared.

Patient consent Obtained.

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