

## Pleuropulmonary Complication of Dengue: A case report with review of Literature

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**Abstracts:** Dengue is a febrile illness, disease of tropical areas, commonly encountered in India. Most of the infections are asymptomatic. The course of dengue infection varies from individual to individual and even in the same individual from time to time. The patient of dengue fever can present with a wide range of clinical manifestations from mild fever to life threatening Dengue Shock Syndrome (DSS) and severe Dengue Hemorrhagic Fever (DHF). Pleuro- Pulmonary complications involve parenchymal infiltration, pleural effusion (small, moderate, massive), pneumonitis, non-cardiogenic pulmonary oedema, hemorrhage-hemoptysis, acute respiratory failure. We report a case of 55 year old male who developed bilateral pleural effusion & pedal oedema and presented to us in acute respiratory failure, semiconscious and shock which was consistent with the diagnosis of Dengue Shock Syndrome. [Gautam A Natl J Integr Res Med, 2018; 9(6):68-71]

**Key Words:** Pleuro-Pulmonary complications, Dengue Shock Syndrome, Dengue Hemorrhagic Fever, Pleural Effusion

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**Introduction:** With more than one-third of the world's population living in areas at risk for infection, dengue virus is a leading cause of illness and death in the tropics and subtropics<sup>1,2</sup>. As many as 400 million people are infected yearly. Dengue is caused by any one of four related viruses transmitted by mosquitoes. There are not yet any vaccines to prevent infection with dengue virus and the most effective protective measures are those that avoid mosquito bites. When infected, early recognition and prompt supportive treatment can substantially lower the risk of medical complications and death. Symptomatic infection ranges from mild fever to life threatening shock (Dengue Shock Syndrome) and Dengue Hemorrhagic fever. More than 50% of chest X-rays in dengue hemorrhagic fever shows abnormality. Most common presentation begins with day 3 with pleural infiltration and small pleural effusion as major findings. Other complications include non-cardiogenic pulmonary oedema, pneumonitis, hemoptysis, ARDS, encephalitis.

**Case Report:** A 55-year-old male patient presented with fever of moderate to high grade, cough initially dry but later associated with expectoration, generalized body ache, decrease appetite & generalized weakness for last 1 month. He was also having few episodes of streaking of blood in sputum for 2-3 days, 15 days back. Patient was suffering from grade IV breathlessness and cough with expectoration, pedal oedema, distension of abdomen, oliguria since 7 days. Patient did not give any history of

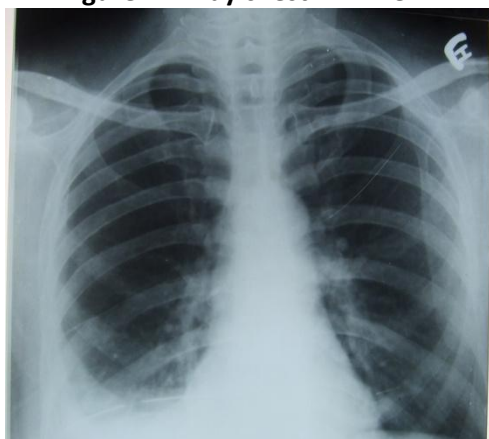
pain in abdomen, diarrhoea, vomiting, joint pain, chest pain, bleeding disorder, evening rise of temperature, night sweats, no history of any surgery, congenital heart disease, foul smelling urine, burning micturition, cold intolerance, palpitation, excessive sweating, facial oedema, polydipsia, polyuria, hypertension.

No other significant comorbidity and there is no history of drug consumption. He is a Principal in a school by occupation & he has no addiction. No history of contact with tubercular patient, no other significant family history. On general examination patient was semi-conscious & disoriented to time, place & person with cold clammy skin, pulse feeble, febrile, tachypneic, redness on bulbar conjunctiva & pallor on palpebral conjunctiva was present. Oral hygiene poor, no any blood stains in oral cavity. Pruritic rashes present on forearm, abdomen & back,

Pedal edema was present. Cyanosis, Lymphadenopathy & Clubbing were absent. On systemic examination B/L Vesicular Breath sound, Intensity decreased on Rt. lower interscapular, Infrascapular & lower axillary area. Vocal resonance decreased on rt. Lower area. First and second heart sound heard, no murmur. Abdomen Soft, no organomegaly. Dengue serology positive for IgM, Peripheral Blood smear for Malarial parasite negative, Widal test negative, S.HIV-non-reactive, Montoux test-negative. Sputum for AFB by smear examination was negative. Urine Examination: Colour- light yellow, pH - 5, Protein- Trace, Pus cells- 2-3 WBC/HPF, Crystals- negative,

Leucocyte Esterase-negative ,R.B.C. – negative. Chest X-ray P.A. view revealed right sided pleural effusion(Figure 1)

**Figure 1: X-ray chest P.A. view**



CECT Chest showed right sided pleural effusion with collapse of underlying lung & minimal left sided pleural effusion. Colour Doppler done for

pedal oedema revealed normal compressibility and flow pattern with normal bilateral leg veins. No thrombus was detected. Thoracocentesis was done — 500cc straw coloured fluid was aspirated from right side, Turbidity- nil, Coagulum- nil, Protien- 3.0 mg/dl & Sugar- 90 mg/dl, pleural fluid ADA - 26.0 U/L, Pleural fluid AFB was negative, Pleural fluid culture was sterile. Pleural fluid cytology showed Total Cell Count-600/mm<sup>3</sup>, Lym. 75%, poly. 00%, Histiocytes-10% Mesothelial Cell nil, few R.B.C USG Abdomen Mild hepatomegaly with diffuse GB thickening with mural stratification, moderate right pleural effusion, minimal left pleural effusion & ascites. Patient was put on I/V antibiotics, I/V fluids were given after i/o charting according to volume status, I/V diuretics were given to manage symptoms of plasma leakage, Tab. Paracetamol For fever, Cough Suppressant & other symptomatic treatment.

**Table:1-Blood Investigation**

PARAMETER	At admission	After 5 days	After 10 days	After 15 days	At Discharge
Hb% (g/dl)	11.30	11.70	11.5	11.9	10.30
PCV (%)	36.80	36.50	35.50	30.00	35.00
TLC (thou/mm <sup>3</sup> )	13.02	12.60	9.35	3.79	7.11
DLC (%)	P 81 L12 E0.2 M 6.80	P 77.80 L15 M 5.90 E1.30	P 77.9 L13.8 E 1 M7	P 75.70 L 16.20 M6.80 E1.30	P75.20 L15.30 M8.70 E0.80
S. Bil. ( mg%)	3.60	4.40	1.20	1.0	1.0
Platelets Counts (thou/mm <sup>3</sup> )	154.0	75.0	135	118.0	120
SGPT ( IU/L)	1500	626	33	49	24
S. Creat.(mg%)	1.6	2.0	2.1	1.8	1.5
S. Proteins(gm%)	6.00	6.40	6.20	7.00	4.80
S. Albumin(gm%)	3.20	3.50	3.50	3.55	2.20
S. Globulin(gm%)	1.20	1.21	1.22	1.50	0.85
S. Na/k	129/2.8	129/4.7	133/4.43	137/3.5	138/4.4

**Discussion:** As the most important mosquito-borne viral disease affecting humans world-wide, dengue continues to be a major public health issue. It is endemic in more than 100 countries and causes an estimated 50 million infection annually world wide. Pulmonary complications seen rarely Include pulmonary infiltration and small pleural effusion as the major findings. Other complications include non cardiogenic pulmonary oedema, ARDS, hemorrhage-hemoptysis, (platelet deficiency), pneumonitis, acute respiratory failure. These complications usually coincides with plasma leakage syndrome and thrombocytopenia, increase WBC Counts, increased liver enzymes. Generally there are

progressive changes in chest X-Ray in first week, with normalization of chest X-ray by day 14. Infiltration seen in dengue patients is generally because of bacterial infection or unknown mechanism. Pleural effusions are mainly transudative caused mainly by imbalance in hydrostatic and oncotic pressures mainly. Non cardiogenic pulmonary oedema is a common complication of fluid replacement in dengue patients. Hemorrhage may be multifactorial because of vasculopathy or platelet dysfunction, blood coagulation defects. Acute respiratory failure seen in dengue patients is a common complication of sepsis/ combination bacterial

infection. Risk factors for acute respiratory failure include

- (a) increased age because of decreased immunity and co-morbidity
- (b) pressure of multiple organ failure
- (c) there is also increased risk in patient with UGI bleedings, sepsis, increased AST, increased in ALT, increased BUN, increased creatinine.

Acute renal failure generally precedes acute respiratory failure. Thus pulmonary complications in dengue coincide with plasma-leakage syndrome namely pleural effusion, infiltration, pneumonitis, acute respiratory failure, ARDS, non-cardiogenic pulmonary oedema. Appropriate serum investigations with serial chest X-Rays with thoracentesis may help in early diagnosis and management.

Dengue has been widely reported but pulmonary complications of dengue have been mentioned only in a few studies. Wiwanitkit studied magnitude of pulmonary pathology in fatal cases of dengue hemorrhagic fever in Thailand and found that almost all death cases had lung pathology<sup>3</sup>. A similar observation was also reported from Cuba<sup>3</sup>. Guzmán et al. noted that lung pathology could be seen in all fatal dengue cases in their study and the virus could be identified in lung of the death cases<sup>4</sup>. Wang et al have reported chest X-ray presentation in patients with dengue hemorrhage fever in which progressive changes in chest X-rays were seen in first week with normalization by the end of second week<sup>5</sup>. He also described acute respiratory failure in adult patients with dengue virus infection, (sepsis and combination bacterial infection as risk factors)<sup>4</sup>. Yeolekar ME et al had described dengue as a rare cause of febrile encephalopathy<sup>5</sup>. Nazish B et al have described haematological & biochemical indicators: increased liver enzymes and thrombocytopenia in DHF patients<sup>7,8</sup>. Chin CW studied that More than 50% of these showed abnormalities after the 3rd day, with infiltration only and small pleural effusion as the major findings. Progressive changes during the first week and improvements during the second week were observed in abnormal CXRs<sup>9</sup>. Srikiatkachorn A. et al. studied that ultrasonographic evidence of plasma leakage was detected in DHF cases starting from 2 days before defervescence and was detected in some cases within 3 days after fever onset. Pleural effusion was the most common ultrasonographic

sign of plasma leakage (62% of DHF cases one day after defervescence)<sup>10</sup>.

Dengue patient described in our case report presented with typical history of fever with chills, myalgias with conjunctival redness and rash. He presented with features of plasma leakage namely pleural effusion, pedal oedema, ascites and hypotension. He presented to us in acute respiratory failure one of the complications of dengue. Dengue was confirmed by positive dengue serology, negative widal, PBF negative for malaria parasite negative. Pleural fluid was transudative. The patient presented with transudative ascites with mild hepatomegaly and deranged liver function test. All other causes of transudative effusion are ruled out by negative history & investigations. Thus pulmonary complications in dengue coincide with plasma-leakage syndrome namely pleural effusion, infiltration, pneumonitis, acute respiratory failure, ARDS, non-cardiogenic pulmonary oedema. Appropriate serum investigations with serial chest X-Rays with thoracentesis may help in early diagnosis and management<sup>11,12</sup>.

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