



# Nature and Clinical Course of Pleural Effusion in Dengue Fever

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## Abstract

**Introduction:** The clinical presentation of dengue fever varies from simple febrile illness to dengue hemorrhagic fever and dengue shock syndrome which may sometime lead to death. Pleural effusion is one of the respiratory complications. Determination of the nature and clinical course of pleural effusion is important. Current study was planned to determine if the effusion in dengue fever is exudative or transudative and if it resolves spontaneously or develops further complication.

**Materials and Methods:** Prospective cross sectional study was conducted on 79 dengue patients. Clinically and radiologically confirmed pleural fluids were drained for diagnostic analysis.

**Results:** Out of 79 patients 10 developed pleural effusion mostly in young adults. Effusion was slightly more common on left side and rare on both sides. All effusions were exudative in nature with mean protein content more than 3.5 g/dl. All effusions resolved spontaneously on follow up visits not requiring any additional intervention.

**Conclusion:** Pleural effusion in DF is exudative but benign and self resolving in nature not requiring any additional intervention.

**Keywords:** Dengue fever; Pleural effusion

## Introduction

Dengue fever is emerging as a major public health hazard in developing countries like Pakistan and is one of the most important mosquito-borne viral illnesses [1].

The dengue fever was endemic only in Southeast Asia and the Western Pacific regions but over a course of 50 years from the first outbreak in Philippine, it spread globally to almost every continent including North and South America, Australia and Africa. The clinical presentations of dengue fever range from asymptomatic to severe illness that may translate to death if not properly managed. The symptomatic cases are categorized as Undifferentiated Febrile illness (UF), Dengue Fever (DF), Dengue Hemorrhagic Fever (DHF), Dengue Shock Syndrome (DSS) and Unusual Dengue (UD) or Expanded Dengue Syndrome (EDS) [2]. Most of the patients recover within ten days, only few develop complications and dies.

The situation has recently become more severe due to increasing number of complicated and uncomplicated cases on a background of limited resources, poor socioeconomic conditions and lack of public health awareness [3].

The dengue virus is a flavivirus having four distinct serotypes; DEN-1, DEN-2, DEN-3 and DEN-4. The incidence of disease and its severity varies between primary and secondary infections and possibly also across different dengue virus serotypes [4]. Some patients with dengue fever progress to a severe form of the disease-Dengue Hemorrhagic Fever (DHF). Around the time the fever begins to subside (usually 3 days to 7 days after symptom onset), the patient may develop warning signs of severe disease which include severe abdominal pain, persistent vomiting, marked change in temperature, hemorrhagic manifestations, or change in mental [5].

One of complication of dengue fever is serositis which include pleural effusion and as cites. Up to now no study has been conducted to find out type of pleural effusion and to find out whether the effusion being self resolving or requires any intervention. This study was aimed to determine the frequency, type and outcome of pleural effusion in recent dengue epidemic.

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## Material and Methods

This descriptive cross sectional study was conducted from September 2017 to November 2017 in medical B unit Khyber Teaching Hospital Peshawar, Dengue patient of all ages were included in the study. Diagnosis of dengue fever was confirmed either detecting Nonstructural protein1 (NS1) through ELISA or by detecting viral load through PCR. Pleural effusion detected clinically was confirmed radiologically through ultrasound. Patients with bleeding diathesis, low platelet count [ $<30,000$ ] and dengue shock syndrome were excluded from the study. Also diagnosed cases of pulmonary tuberculosis, malignant pleural effusions or patients having autoimmune/connective tissue diseases were excluded from the study. Non probability consecutive sampling technique was used. After clinical and radiological confirmation of pleural effusion, 20 cc of pleural fluid under aseptic condition was aspirated and processed for microscopy, chemistry, culture and sensitivity. A total of 10 pleural taps were sent for microscopy and all tap were exudative having protein content of more than 3.5 g/dl. Light's criteria were used to classify pleural fluid into exudative or transudative type. According to which pleural fluid is exudative if it has protein content of  $>2.9$  g/dl. Patients were followed up two weeks after discharge from hospital.

## Results

Out of 79 dengue patients 10 suffered from pleural effusion. Mean age of our subjects was  $37.1 \pm 12.02$  SD. Four out of ten patients had right sided, 5 had left sided while one patient had effusion on both sides. All effusions were Exudative in nature with a Mean protein value of  $3.9$  g/dl  $\pm 0.24$  SD. All effusions resolved spontaneously without the need for any additional intervention. On follow up visits all patients remained asymptomatic and none developed any complication.

## Discussion

Pleural effusion is one of the complications of dengue fever resulting from the plasma leakage into the pleural cavity [6]. Very little work has been done to determine the nature of pleural effusion in dengue fever. Effusion may be exudative or transudative depending upon the pathophysiology. Pleural effusion in dengue fever is one of the severity markers though mostly it is mild and self resolving requiring no intervention [7].

Pleural effusion was noted in 10/79 (12.6%) patients more common in young adults vs elderly sufferers. Similar incidence has been reported by Ejaz et al. [7] in their study. It was slightly more common on left side 5/10 (50%) as opposed to the global data [8]. All pleural effusions were exudative in nature and none was transudative. This study is first of its kind in determining the nature of pleural effusion as currently no published literature is available in this regard. All patients came for follow up two weeks after discharge from hospital in healthy state without developing pleural effusion related complications signifying the benign nature of pleural effusion in dengue fever.

## Conclusion

Pleural effusion in dengue fever is exudative in nature but usually self resolving not requiring any additional or specific therapy apart from the supportive general management of dengue fever.

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