

# An Unusual Presentation of Fat Embolism Syndrome as Cerebral Fat Embolism in Trauma: A Rare Clinical Entity

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## Abstract

Fat embolism syndrome is a rare clinical complication of fat embolism which occurs in almost 90% of long bone fractures. Incidence of FES is around 0.2 to 2.5 % in overall cases of fat embolism. Its diagnosis is mainly clinical characterized by triad of respiratory, dermatological and neurological manifestations. We are presenting a case of 20 year young male who suffered traumatic left femoral shaft fracture in RTA. After uneventful 24 hours patient suddenly developed altered sensorium in absence of any respiratory or dermatological manifestation. He was confirmed to have CFE after series of brain imaging and was then managed conservatively for the same to which he responded well.

**Keywords:** Cerebral Fat Embolism; Fat Embolism Syndrome; Major Trauma; Traumatic Brain Injury.

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## Introduction

Fat embolism occurs very commonly in patients who have sustained major injuries. Although, its incidence is as high as 90% in such cases but most of them are subclinical. However, rarely it can lead to life threatening complication as "fat embolism syndrome".

FES is characterized by systemic inflammatory cascade affecting multiple organ systems.

Its diagnosis is mainly clinical indicated by development of respiratory distress, petechiae and cognitive dysfunction in first few days following trauma, long bone fractures or medullary surgery.

FES is believed to occur due to a sequence of biochemical reactions resulting from injury sustained in major trauma. Release of fat emboli leads to occlusion of microcirculation, leading to an inflammatory response that is clinically presented by dermatological, pulmonary and neurological dysfunction. Usually initial clinical presentation of every case of FES is pulmonary with symptoms as observed in ARDS typically appearing within 24 hours after the initial injury.

1 out of 5 cases of FES can present with other features along with pulmonary symptoms particularly involving brain and kidney. As a result of cerebral microcirculation occlusion, patient can have gross encephalopathy, localized cerebral edema and white matter changes.

In our case, the patient presented with isolated neurological features making the clinical suspicion of diagnosis of "cerebral fat embolism" less likely at first place.

## Case Report

A 20 years old patient was presented to emergency department after alleged history of road traffic accident at about 2:30 pm in Chandigarh. As per attendants, patient while driving two wheeler was hit by an unknown vehicle from behind. He was wearing helmet at time of injury.

There was no history of loss of consciousness, seizure, ENT bleed, vomiting.

Patient was admitted in government hospital, Chandigarh.

Initial NCCT head was normal, X-ray left thigh showed fracture shaft femur. Initial systemic examination was unremarkable and patient was conscious, oriented with GCS- E4V5M6.

Almost 24 hours after injury patient became irritable and there was deterioration of GCS for which NCCT head was repeated which was again normal.

In view of worsening condition patient was referred for Max Hospital, Shalimar Bagh.

Patient was transported by ambulance with Thomas splint in situ for immobilisation of left femur.

*On Presentation:*

*Primary Survey*

Airway- Patent

Breathing - Respiratory rate- 20/min

Spo2 - 99% on room air

Circulation - Heart rate- 100 bpm

Blood pressure- 130/70 mm of Hg

Peripheral pulses- palpable, good volume, rhythmic.

Disability - GCS- E3V3M6

B/L pupils - Mid dilated with sluggish reaction to light

Exposure- Left thigh swelling present

Left Thomas splint in situ

Pelvis compression - Negative

Log roll - No step deformity, No back and perineal injury.

PR examination -WNL

*Secondary Survey*

HEENT: No external head/ neck/ face injury. No Cervical tenderness present.

RS: Trachea midline, No distended neck veins.

B/L air entry equal, no added sounds.

No palpable crepitus.

CVS: S1,S2 heart sounds normally heard.

P/A: No visible bruise, abdomen soft, Non tender, bowel sounds normally heard.

No external genitalia injury.

CNS - Irritable, confused, bilateral plantar extensors.

Extremities Multiple abrasions in lateral aspect of left thigh.

Multiple linear abrasions in right flank region.

A 2 cm linear abrasion over right foot

A 3x3 cm bruise over medial aspect of left thigh.

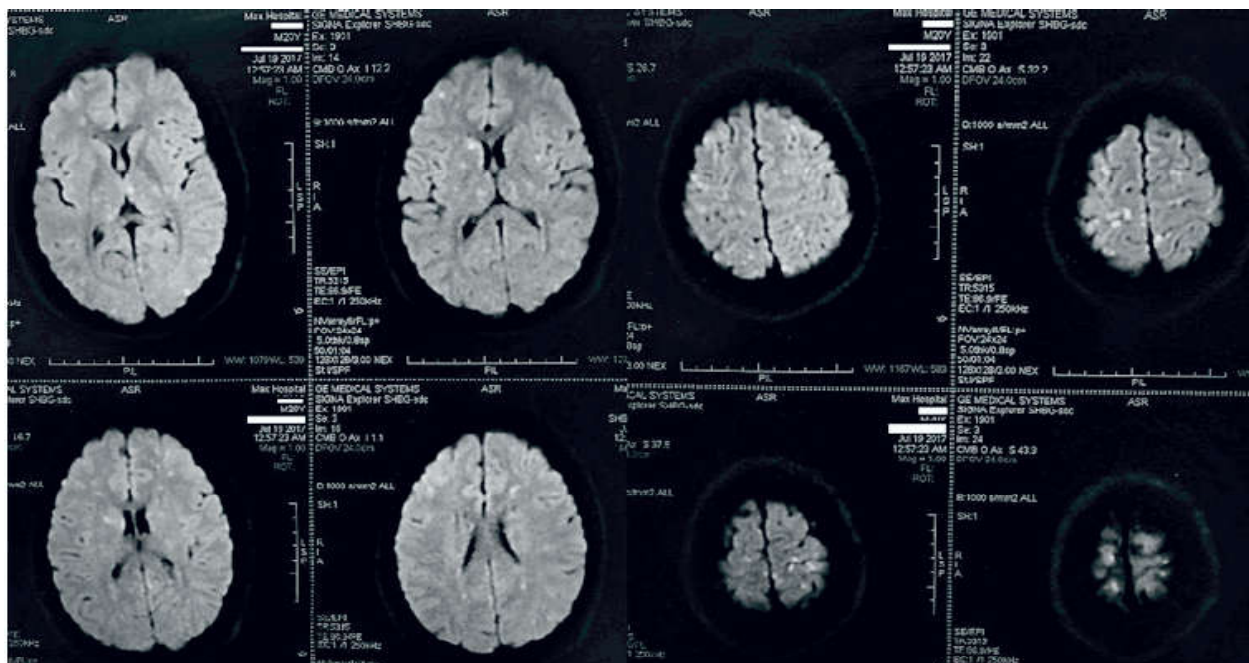


Fig. 1:

*AMPLE*

Allergies: No known allergies.

Medication: Not on any medications.

Past medical history: No significant past medical history.

Events leading to incident: As described above.

After examination, primary treatment was done and in suspicion of any intracranial pathology patient was immediately shifted to radiology department for brain imaging.

*On Investigations*

MRI brain revealed multiple small dot like lesion in cortico-subcortical junction and B/L basal ganglia suggestive of cerebral fat embolism.

In view of above findings immediate neurology consultation was taken and patient was admitted in ICU under combined care of neurology, orthopaedics and cardiology team. Patient was started on conservative treatment for cerebral fat embolism to which patient responding well.

**Conclusion**

Fat embolism syndrome is a very rare complication of fat embolism which can even present with isolated neurological finding as cerebral fat embolism in absence of any classical pulmonary and dermatological findings.

So we as emergency physicians should have high suspicion to diagnose it at earliest with help of clinical

features supported by investigations and to initiate appropriate therapy at earliest because in case of delayed diagnosis it can lead to poor prognosis and even death.

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