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Case Report

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Fat Embolism Syndrome complicated by Acute Pulmonary Thromboembolism after Bilateral femoral shaft Fractures: Two Nightmares in The Same Patient

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A B S T R A C T

Fat embolism syndrome is an uncommon but fatal complication usually in orthopedic trauma especially after a long bone fracture. A high level of suspicion should be kept in mind when a patient of long bone fracture develops hypoxia, confusion or rash in the absence of infection and other causes of ARDS. Concomitant FES and pulmonary thromboembolismis a more rarer entity in comparison to FES and pulmonary thromboembolism separately. There are few cases reported in literature where in patients developed concomitant FES and pulmonary embolism. Almost in all cases fat embolism syndrome and pulmonary embolism occurred either simultaneously or pulmonary thromboembolism was complicated by FES. No case has been reported where pulmonary embolism was preceded by FES. We report one such case wherein patient initially developed FES pre operatively which was later on complicated by acute pulmonary thromboembolism in the post operative period.

Keywords: Fat Metabolism Syndrom; Pulmonary thromboembolism; Femoral Shaft fracture.

Abbreviations: FES (Fat embolism syndrome), PTE (Pulmonary thromboembolism).

Case Description

A 23 year old young healthy female was brought to orthopedic emergency department with history of road traffic accident. On assessment she had closed bilateral femoral shaft fractures (Fig. 1). The fractures were immediately splinted and she was admitted for definitive fixation. 48 hours after admission she developed sudden and progressive shortness of breath and hypoxia with an oximetric saturation of 75% on ambient air, requiring Fio 2 of 60% to maintain saturation of >94%. There was no altered sensorium, truncal rash, vision abnormality but she was febrile, restless, tachycardic and in respiratory distress. Cheat X-ray was grossly normal.

Having suffered bilateral femoral shaft fracture and subsequent immobilization a possibility of fat embolism verses pulmonary embolism was made. CTPA was done which showed ground glass opacities in bilateral lung fields more in the lower zones consistent with interstitial hemorrhage associated with fat embolism (Fig. 2). Hemogram revealed drop of hemoglobin from 13 mg/dl to 11 mg/dl and thrombocytopenia. ESR was raised and serum fat macro globules were present fulfilling the GURD and WILSON criteria for Fat Embolism Syndrome. She was managed in ICU with oxygen support, aggressive vital monitoring, DVT prophylaxis and intravenous methylprednisolone.

She showed progressive improvement in her oxygen saturation over a period of five days and after achieving hemodynamic stability she was subjected to fixation of fractures under spinal anesthesia and perioperative course remained uneventful.

Three days after internal fixation of fracture she again developed hypoxia and was tachycardic and tachypnoeic on clinical examination. There was no fever or any new infiltrates on chest X-ray. Qualifying as high risk on Well's PTE score CTPA was done which showed thrombi in left interlobar artery and right lower lobe segmental branches (Fig. 3). There was no hypotension or right ventricular strain on echocardiography and cardiac bio markers were negative. she was started on rivaroxaban 15mg BD. She showed improvement in oxygenation and was discharged after 15 days of complicated hospital course in hemodynamically stable condition on oral anticoagulation.

Discussion

Fat embolism syndrome and pulmonary embolism are common differential diagnosis in patients of orthopedic trauma and surgeries when they develop hypoxia.[1] However concomitant fat embolism and pulmonary embolism are very rare. After searching extensive literature we found only few cases of concomitant fat and pulmonary embolism. Cothrenet al., reported a case of concomitant FES and pulmonary embolism in a patient with pelvic fracture.[2] Randelliet al., reported a case of pulmonary embolism complicated by fat embolism in a patient with bilateral femoral shaft fractures.[3] Shaoet al., reported a case of concomitant FES and pulmonary thromboembolism with tympanic membrane perforation in a patient with tibio femoral fracture.[4] Ebinaet al., reported a case of pulmonary thromboembolism complicated by FES in a patient with femoral shaft fracture.[5] Yeaket al., reported a case of fat embolism syndrome and pulmonary embolism in a patient with patent foramen ovale.[6] Our case is first of its kind in a sense that our patient developed initially fat embolism

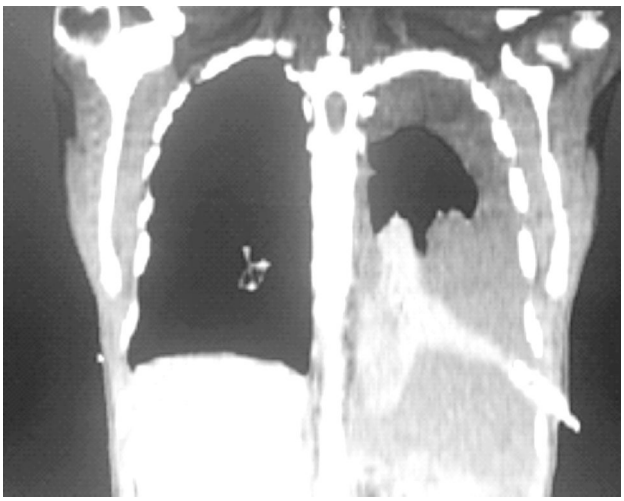

Fig 1: CT chest showing right sided moderate pleural effusion

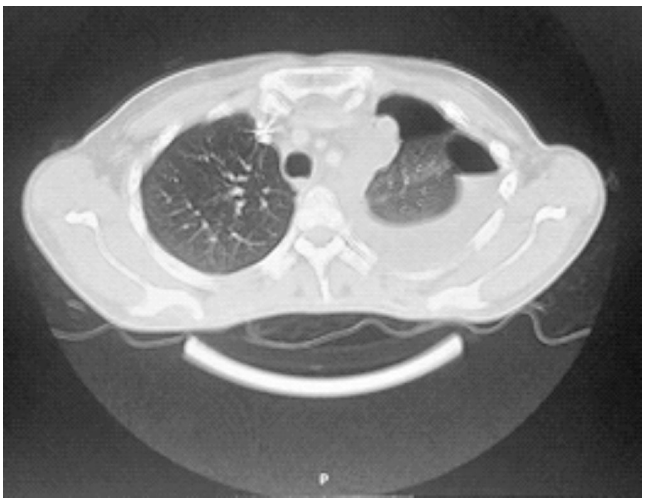

Fig 2: CT chest showing right sided moderate pleural effusion

Fig. 1a: Fracture bilateral shaft of femur.

Fig. 1b: Fracture fixated with intramedhllary nail

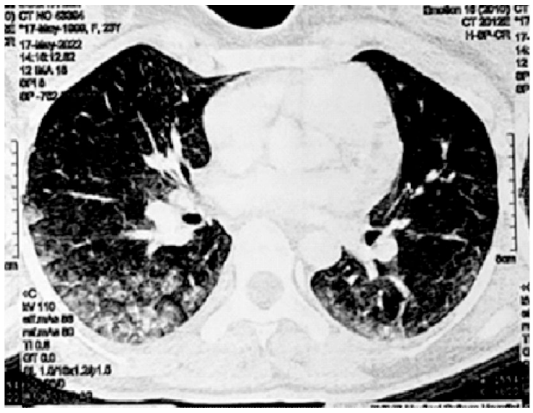

Fig. 2: CT image shows ground glass opacities in bilateral lung fields (R>L).

Fig. 3a: Depicting thrombus in left.

Fig. 3b: Depicting thrombusin right lower interlobar artery lobe segmental

preoperatively followed by acute pulmonary thromboembolism in the postoperative period which has not been reported earlier to the best of our knowledge and search.

Conclusion

Concomitant FES and Acute PTE are very to occur with few cases reported in literature. we present a unique and first report in which a patient initially developed FES in pre operative period and later on suffered mild PTE also post operatively. We suggest that patients of orthopedic trauma who develop FES should be closely followed and monitored for the development of PTE. whether FES is a risk factor for pulmonary thromboembolism needs to be elucidated in large randomized studies.

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