Fat Embolism Syndrome in Fracture Tibia Treated By Unreamed Interlocking Nail

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What to Learn from this Article?

Serious events like Fat Embolism can occur in low risk cases of long bone fracture and the infrastructure and expertise should be ready to tackle any such situation?

Abstract: Incidence of Fat embolism syndrome (FES) in fractures is about 16.3 but sometimes it is as high as 50% to 62%. The fat embolism is common in fatty bed ridden patients and in whom reamed interlocking is performed under tourniquet with prolonged injury-surgery interval. However in the case discussed here FES occurred under the exact opposite circumstances. In this 23 year lean and thin female with closed tibia fracture unreamed interlocking was performed without tourniquet & the operative procedure was done within 4 hours after trauma. Her pre-operative investigation were within normal limit. We want to discuss by this case report to highlight that even when risk factors are absent outlier events of FES can occur in any case and symptoms should not be discounted

Introduction

Fat embolism syndrome (FES) is more common following severe injuries with multiple fractures and fractures of long bones but can also occur in orthopaedic procedures, most commonly during intramedullary nailing of the long bones or hip or knee replacements [1-3]. Most cases do have certain predisposing factors like fat patient, longer injury surgery interval, reamed nailing etc. Present case highlights occurrence of FES in a low risk case

Case Report

A 23 year old female was admitted to hospital 3 hours after being hit by motor cycle while she was crossing the road. The patient was lean & thin. The height of the patient was about 152 cm and weight of patient was 45 kg. She sustained closed short oblique fracture of tibia and fibula at middle third junction with no associated injury. Distal pulses were palpable and there was no neurological deficit.

Routine blood investigations and chest radiographs were normal. HIV, HBsAg, HCV was non reactive. Elective surgery was done by unreamed tibial interlocking nail under spinal anaesthesia, 4 hours after admission. Operative procedure took 45 minutes. Her vitals were stable in immediate post operative period. Eight hours after surgery, she was disoriented not responding to verbal command. Body temperature was 39°, and respiratory rate was about 40/min with pulse rate of 136/min. She was investigated and was immediately shifted to I.C.U.

Arterial blood gas analysis was done- pO2 was 49.1 mmHg, pCO2 was 33.8 mmHg, O2 saturation—82.1%, S.Na+-134 mmol/ L, S.K+--4.2 mmol/L. Chest roentgenogram showed opaque shadow / infiltration on left side of chest. Patient was diagnosed as a case of fat embolism and was heparinized in the dose of 5000 IU subcutaneously every 12 hourly. She was intubated, put on ventilator and was oxygenated. At the time of intubation, she had a respiratory rate of 42 / minute, SBP of 95 mm Hg, peripheral pulse of 120 / minute, and O2 saturation of 82.1%. At clinical examination, petechiae in both axillae and on conjunctiva could be seen. Patient was on ventilator for 3 days, was given CPPV breathing for another 2 days and was then extubated without any problems. She was discharged on 6th post operative day in

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Figure 1 : Preoperative radiograph of left leg showing short oblique fracture of tibia and fibula at middle third junction with narrow canal.

Figure 2: Immediate postoperative radiograph showing internal fixation of the fracture by interlocking nail of the tibia.

satisfactory condition.

Discussion

Fat embolism is not uncommon phenomenon following limb fracture. It develops in 0.5% to 2% of all patients with fractures of the long bones and has been associated with high morbidity and mortality. It usually occurs when reamed interlocking is performed under tourniquet. There is usually a latent period of 24 to 72 hours between injury and onset, but in this patient symptoms appeared within 16 hours after trauma & 4 hours after internal fixation. The onset is then sudden, with breathlessness & chest pain, high pulse rate, petechial rash present in conjunctivae. Central nervous system symptoms, disorientation, confusion, renal-oligouria and drowsiness are common.

For appropriate management of patient of fat embolism, embolism should be diagnosed early and appropriate supportive measures started immediately.

Conclusion

Our patient was low risk for fat embolism but the unexpected event did occur in her. Surgeon should always be conscious about such outlier occurrences and staff should be trained enough and be vigilant in post-op period till 4 days post-op.

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Case Snippets

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