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ORIGINAL RESEARCH

Assessment of prevalence of Fat embolism in multiple trauma patients

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Abstract
Background: The present study was conducted for evaluating the prevalence of Fat embolism in multiple trauma patients.
Materials & methods: A total of 100 patients who reported to emergency department with multiple traumatic injuries were enrolled. Complete demographic and clinical details of all the patients was obtained. A Performa was made and details of radiographic examination was noted. On the basis of CT/MRI findings, diagnosis of fat embolism was done. Follow-up record was done and mortality rate was recorded. All the results were recorded and analysed using SPSS software.
Results: Overall mortality rate was 15 percent. Fat embolism was present in 15 percent of the patients. Mortality rate among the patients with and without fat embolism was 60 percent and 25.88 percent respectively. Mortality rate was significantly higher among patients with fat embolism.
Conclusion: Fat embolism is significant associated with higher mortality rate among trauma patients.
Key words: Trauma, Fat embolism, Prevalence

Introduction
Fat embolism (FE) and fat embolism syndrome (FES) are a clinical phenomenon that are characterized by systemic dissemination of fat emboli within the system circulation. The dissipation of fat emboli will disrupt the capillary bed and affect microcirculation, causing a systemic inflammatory response syndrome.Fat embolism and fat embolism syndrome also can occur intra operatively while repairing a long bone fracture.[1, 2] With a transesophageal echocardiogram, fat embolism has been detected in close to 41% patients of multiple trauma.Fat embolism has a higher incidence than fat embolism syndrome.The pathogenesis of fat embolism syndrome is poorly understood, and evaluation of the progression of histopathological changes in patients is not very practical.[3, 4]The neurological manifestations of fat embolism can vary from mild cognitive changes to coma and even cerebral oedema and brain death. On magnetic resonance imaging (MRI), cerebral fat embolism (CFE) can demonstrate a "star field" pattern due to the presence of multiple microembolic infarcts in the whole brain.[5, 6]Hence; the present study was conducted for evaluating the prevalence of Fat embolism in multiple trauma patients.

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Materials & methods

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Results

Mean age of the patients was 44.2 years. Out of 100 patients, 63 were males while the remaining 37 were females. Overall mortality rate was 15 percent. Fat embolism was present in 15 percent of the patients. Mortality rate among the patients with and without fat embolism was 60 percent and 25.88 percent respectively. Mortality rate was significantly higher among patients with fat embolism.

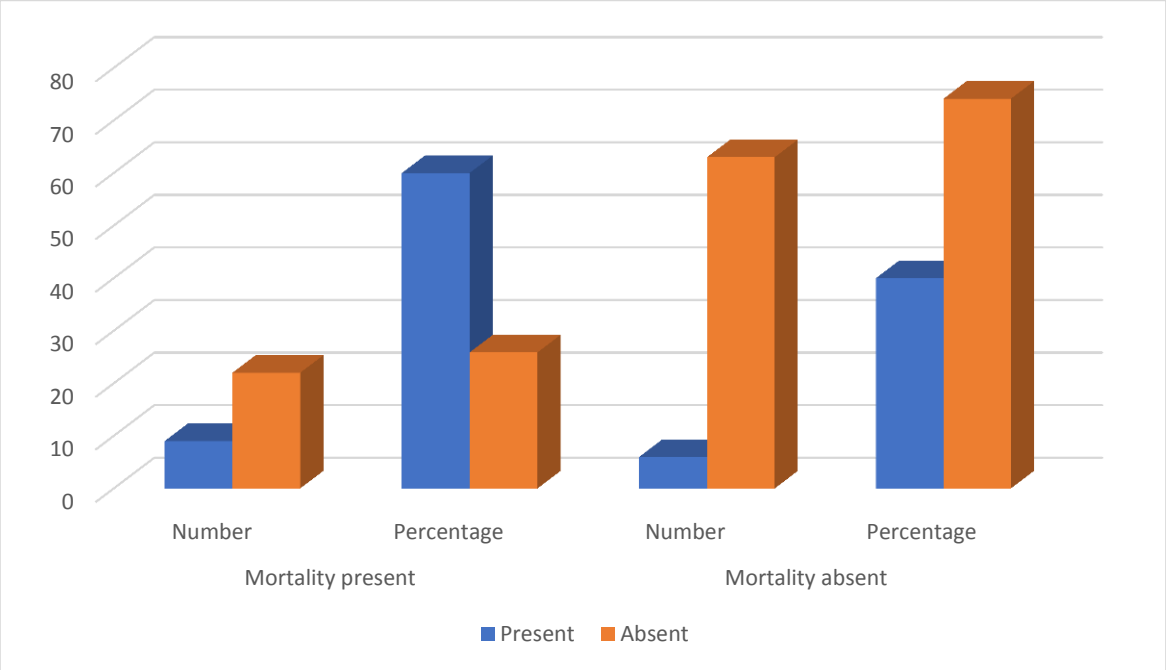
Table 1: Prevalence of fat embolism

Fat embolism	Number	Percentage
Present	15	15
Absent	85	85
Total	100	100

Table 2: Mortality rate

Fat embolism	Mortality present		Mortality absent		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Present	9	60	6	40	15	100
Absent	22	25.88	63	74.12	85	100
Total	31	31	69	69	100	100
p-value	0.00 (Significant)					

Graph 1: Mortality rate



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Discussion

Dyspnoea in the trauma wards is not a rare occurrence, and it is a usual practice for the respiratory physician to get a call for a patient in acute distress in the trauma wards. The causes of dyspnoea can vary in origin and in the gravity of situation it may lead to. The various causes of dyspnoea, secondary to trauma are pulmonary contusions, fat embolism syndrome, shock lung, thromboembolism etc. These conditions are to be differentiated from other causes of dyspnoea like metabolic causes and cardiovascular causes. Differentiating each clinical condition from the others, in optimistic terms is perplexing and in pessimist terms, almost impossible.[7- 9]Hence; the present study was conducted for evaluating the prevalence of Fat embolism in multiple trauma patients.

Mean age of the patients was 44.2 years. Out of 100 patients, 63 were males while the remaining 37 were females. Overall mortality rate was 15 percent. Fat embolism was present in 15 percent of the patients. One study reviewed 1692 patients with long bone and pelvic fractures and found that 12 patients (0.7 %) met the diagnosis of FES. Five had multiple bone fractures (42 %), and three were diagnosed with CFE. All of the patients with CFE had neurological status alterations and showed T2 and FLAIR hyperintense lesions in the bilateral cerebral hemisphere, basal ganglia, thalamus, pons and cerebellum.[9]Fat embolism is an acute circulatory disturbance caused by trauma, manifested anatomically by the presence of fat globules within the vessels of the circulation and by certain secondary changes which these produce; clinically it is recognized by the presence of restlessness, dyspnea, delirium, coma and, frequently, death.The cause of fat embolism is always trauma. It may have been such a trauma as to have caused a fracture of bones, a type which is most likely to produce fat embolism; or it may be the trauma which has caused a blunt injury to adipose tissue, or a rupture of certain viscera rich in fat, such as the liver, although this type of case is comparatively rare; it may occur in certain surgical procedures where considerable trauma is employed in the forcible correction of bones and joints such as sometimes happens in the operations of osteoclasis on reaming of long bones while nailing.[10- 12]Clinical approach to patients with fat embolism includes, general patient assessment involving the traumatic situation, coordination of patient care, active nutritional support, symptomatic treatment, and adequate physical intervention. Accepted treatment dosage and duration of treatment with steroids is not known for Fat embolism. However, clinically known beneficial effects of steroids includes stabilizing pulmonary capillary membrane, suppression of inflammatory response, reduction of interstitial edema, preventing activation of the complement system and has such as preventing platelet activation.[12- 14]

Mortality rate among the patients with and without fat embolism was 60 percent and 25.88 percent respectively. Mortality rate was significantly higher among patients with fat embolism. Most patients of fat embolism recover completely if adequate supportive treatment and improved nursing is provided. The overall mortality for this condition is 5-15%, with severity of respiratory problems being a close indicator of the risk of death. Bulgeret al reported mortality of 7%. The major cause of death in Fat embolism patients is the progressive respiratory failure, when the pulmonary lesion evolves to ARDS. Mortality rates between 14 and 87% were reported in FES occurred in polytrauma cases. Early fixation of fractures and modern ICU care has decreased the incidence of FES to be less than 10%.[10-16]

Conclusion

Fat embolism is significant associated with higher mortality rate among trauma patients.

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