

Effect of laboratory parameters on peri-operative mortality in Fracture Neck of Femur in elderly patients 60 years and above

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Abstract

Background: Hip fractures in elderly patients are serious injuries that can lead to immobility and permanent dependence, negatively impacting patients’ quality of life and resulting in a financial burden for health systems and societies. Hip fractures can also lead to death.

Methods: The present study was conducted in patients with fractures neck of femur (age 60 years and above) presenting to the Department of Orthopaedics, Dr RPGMC Kangra at Tanda. All cases presenting to the department and fulfilling the criteria were studied for a period of one year starting from the date of start of the study.

Results: Our study observed that Hb, serum albumin lymphocyte count, and potassium levels were

comparable between the groups. Our study observed that mean urea levels in group A, group B, and group C were 38.00 ± 12.57 , 22.80 ± 12.23 , and 23.66 ± 11.35 respectively. Mean urea levels were statistically significant between the groups ($P=0.033$). Our study observed that mean creatinine levels in group A, group B, and group C were 1.38 ± 0.63 , 1.08 ± 0.23 , and 0.98 ± 0.28 respectively. Mean creatinine levels were statistically significant between the groups ($P=0.031$). Our study observed that mean sodium levels in group A, group B, and group C were 133.86 ± 7.05 , 135.16 ± 4.68 , and 138.35 ± 4.19 respectively. Mean sodium levels were statistically significant between the groups ($P=0.049$).

Conclusion: We found that perioperative mortality was significantly influenced by renal functions and serum electrolytes values.

Keywords: Mortality, Hip, Fracture, Age, Sex.

Introduction

Hip fractures in elderly patients are serious injuries that can lead to immobility and permanent dependence, negatively impacting patients' quality of life and resulting in a financial burden for health systems and societies. Hip fractures can also lead to death.¹ Mortality rates among the elderly following hip fractures range between 14% and 36% within one year of the injury.^{2,3} During the first three months after hip fracture, elderly patients have a 5- to 8-fold increased risk of dying.⁴ The increased mortality risk persists up to ten years. Because of a predicted increase in life expectancy in western countries over the next decades, hip fractures and their consequences will have an even larger impact on health systems and societies in the future.

Factors that influence prognosis of elderly patients after hip fracture are age, gender, comorbidities, anticoagulation therapy, and general physical health status at the time of injury.⁵ Furthermore, timing of surgery is thought to play an important role regarding survival. Although international clinical practice guidelines recommend surgical treatment of acute hip fracture within 24 to 48 hours after admission, these recommendations are still discussed controversially.^{6,7} Some researchers argue that early surgery can lead to an increased risk of perioperative complications, including pneumonia, deep venous thrombosis, bleeding, pulmonary embolism, urinary tract infections, and decubital ulcerations because clinicians do not have enough time to optimize patients' medical conditions preoperatively.⁸

Material and method

The present study was conducted in patients with fractures neck of femur (age 60 years and above) presenting to the Department of Orthopaedics, Dr RPGMC Kangra at Tanda.

All cases presenting to the department and fulfilling the criteria were studied for a period of one year starting from the date of start of the study. The study was initiated following approval from Institutional Ethics Committee. The patients were given the right to abstain from participation in the study or to withdraw at any time of the study without reprisal.

Inclusion criteria

All patients of fractures neck of femur 60 years and above.

Exclusion criteria

1. concomitant trauma involving other systems
2. associated fracture of the pelvis
3. bilateral hip fracture
4. pathological fracture
5. did not give consent to participate in the study

After a detailed history, patients were clinically evaluated at the time of admission. Demographic data of the patients such as age, sex, pre-existing co-morbidities, type of fracture, degree of osteoporosis and type of surgical procedure were recorded. For classification of co-morbidities in the study population, the American Society of Anesthesiologist (ASA) score was used which is as follows:

- Patient is a completely healthy fit patient.
- Patient has mild systemic disease.
- Patient has severe systemic disease that is not incapacitating.
- Patient has incapacitating disease that is a constant threat to life.

Statistical analysis

The data were presented as frequency, percentages or mean±SD whereas applicable. Student t-test was used to compare continuous variables between 2 groups. Chi-

Results

The present study was aimed to determine peri-operative mortality in fractures of neck of femur in the elderly patients presenting to the Department of Orthopaedics at Dr RPGMC Tanda over the period of one year. A total of 90 patients were included in the study. Results of the study have been described below:

A total of 90 patients with fracture neck of femur were included in the study over a period of one year.

Our study observed that Hb, serum albumin lymphocyte count, and potassium levels were comparable between the groups. Our study observed that mean urea levels in

Laboratory investigations (n=90).

	Group A (n=5)	Group B (n=6)	Group C (n=79)	P Value
Hb	10.04±2.99	10.57±0.84	10.99±2.08	0.559
Serum Albumin	2.98±0.65	3.13±0.53	3.37±0.49	0.136
Lymphocyte Count	13.86±5.13	16.90±7.97	13.89±6.45	0.548
Urea	38.00±12.57	22.80±12.23	23.66±11.35	0.033
Creatinine	1.38±0.63	1.08±0.23	0.98±0.28	0.031
Sodium	133.86±7.05	135.16±4.68	138.35±4.19	0.049
Potassium	4.14±0.88	4.57±0.61	4.60±0.52	0.225

Discussion

The present study was aimed to determine peri-operative mortality in fractures of neck of femur in the patients (age 60 years and above) presenting to the Department of Orthopaedics, Dr RPGMC Kangra at Tanda.

All cases presenting to the department and fulfilling the criteria were studied for a period of one year starting from the date of start of the study. The study was initiated following approval from Institutional Ethics Committee. Patients fulfilling inclusion criteria were

square test was used to compare categorical variables. P value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.

group A, group B, and group C were 38.00±12.57, 22.80±12.23, and 23.66±11.35 respectively. Mean urea levels were statistically significant between the groups (P=0.033).

Our study observed that mean creatinine levels in group A, group B, and group C were 1.38±0.63, 1.08±0.23, and 0.98±0.28 respectively. Mean creatinine levels were statistically significant between the groups (P=0.031).

Our study observed that mean sodium levels in group A, group B, and group C were 133.86±7.05, 135.16±4.68, and 138.35±4.19 respectively. Mean sodium levels were statistically significant between the groups (P=0.049).

evaluated in detail at time of admission. Demographic data of the patients such as age, sex, pre-existing comorbidities, type of fracture, degree of osteoporosis and type of surgical procedure were recorded.

All data concerning the type of surgery, hospital stay and perioperative mortality was collected. After surgery patients were discharged on the fourth day if the clinical conditions permitted. The telephone number of the investigator was marked on discharge card. The patients were followed up in OPD on the 15th postoperative day

for sutures removal and further on 45th and 90th postoperative day for assessment of functional ability.

In our study, age, sex, economic status, BMI, and arm circumference were comparable in the non-survivors and survived patients. Urea levels were significantly higher in died patients. It has been suggested mortality is significantly influenced by preoperative cognitive state, medical comorbidities and mobility. Dementia, chronic obstructive pulmonary disease, chest infection, heart failure, anemia, abnormal sodium (low or raised), elevated urea, elevated creatinine and malignancy, have all been described as risk factors for increased mortality in the months following a hip fracture. However, in our study only elevated urea levels were observed. Increased urea levels as a predictor of 30-day mortality has been reported earlier by Sheikh et al.⁹

Conclusion

We found that perioperative mortality was significantly influenced by renal functions and serum electrolytes values.

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