TITLE OF THE STUDY

To observe the change in serum bone biomarkers (BMs) over a period of six months among patients with acute spinal cord injury

DEPARTMENT	Physical Medicine and Rehabilitation (PMR)
NAME OF THE CANDIDATE	Dr Prince Thakkar
DEGREE AND SUBJECT	MD PMR
NAME OF GUIDE	Dr George Tharion

OBJECTIVES

- Compare the biomarker levels of acute spinal cord injury patients with age matched premenopausal and post menopausal female group in the community, from another study at Endocrinology department.

- To observe the effect of Vitamin D on the bone biomarkers.

METHODS

This was a prospective study of bone biomarkers in patients with acute SCI enrolled within 1 months of sustaining injury. This study was conducted in the Department of Physical Medicine and Rehabilitation. Acute spinal cord injury patients aged between 18-45 years, who met the inclusion and exclusion criteria were enrolled for a period of 6 months from April 2014 to June 2015. Thirty patients were enrolled for the study; twenty acute spinal cord injury patients completed the study. Baseline demographic parameters, age, sex were assessed. Serum calcium, phosphorus, creatinine, albumin and alkaline phosphatase were assessed as part of routine clinical evaluation. Fasting samples of Serum C Telopeptide and Osteocalcin, bone resorption and formation markers respectively were collected. Patients with hyperthyroidism,

hyperparathyroidism, hepatic or renal dysfunction, malabsorption or on medications for osteoporosis were excluded. Enrolled patients were followed up with serial estimation of bone biomarkers at 1, 3 and 6 months. Data was collected to observe the change in bone biomarker levels among acute SCI patients over a period of six months and statistically analysed. In addition, serum bone biomarkers of the patients were compared with age matched premenopausal females as "control group" and post menopausal females as "vulnerable group" from the community, from another study conducted at Endocrinology Department of our institution.

CONCLUSION

In conclusion, biochemical markers of bone turnover were observed longitudinally in a cohort of acute SCI patients, demonstrating a dramatic rise in resorption markers but only a minor rise in formation markers. When compared to age matched controls and post menopausal females there was significant rise in the bone resorption markers. The resorption markers started declining after 4 months of injury but did not return to base line until 6 months suggesting ongoing bone loss at significant higher levels in comparison to the control group. This emphasizes the need of prevention of bone loss before it leads to osteoporosis and fracture. Fractures are prevalent in developing countries, as wheel chair is not accessible and ambulation by crutches is emphasized as the mode of mobilisation. Fracture prevention should be the goal in people with SCI as it increases the morbidity significantly. Hence, would suggest longitudinal studies of bone biomarkers until this return to base line and its relation with BMD of lower limbs, such that appropriate treatment can be initiated sufficiently early to prevent pathological fractures among SCI patients. Further studies to observe the response of bone biomarkers on treatment with antiresorptive agents will be the next step ahead in the goal of minimising early bone loss and prevention of pathological fracture among spinal cord injury patients.