Research Article:

Radiographic Parameters in Diagnosis of Posterior Ligamentous Complex Injury

Shahrokh Yousefzadeh-Chabok[1], Zoheir Reihanian[2], Amin Naseri[3], Khatereh Asadi[1*], Roghieh Molaei-Langroudi [4], Mesbah Dibavand[3], Enayatollah Homaie Rad[5]

1. Guilan Road Trauma Research Center, Guilan University of Medical Sciences, Rasht, Iran
2. Neuroscience Research Center, Poursina Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
3. Department of Neurosurgery, Poursina Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
4. Department of Radiology, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
5. Social Determinants of Health Research Center, Guilan University of Medical Sciences, Rasht, Iran

Citation: Yousefzadeh-Chabok Sh , Reihanian Z, Naseri A, Asadi Kh, Molaei-Langroudi R, Dibavand M, Homaie Rad E. Radiographic Parameters in Diagnosis of Posterior Ligamentous Complex Injury. Iran J Neurosurg. 2020; 6(3)

ABSTRACT

Background and Aim: Diagnosing the status of the posterior ligament complex (PLC) plays an essential role in the management of patients with thoracolumbar fractures. In this study, due to the inefficiency of existing imaging modalities in the accurate detection of PLC damage, we investigated the relevance of some imaging parameters to specific guidelines for rapid PLC injury detection. **Methods and Materials/Patients:** In this study, 50 patients with and 50 patients without PLC injury were included. MRI, CT scan, and radiographic imaging of the thoracolumbar spine (T12-L1) were evaluated. The thoracolumbar injury classification systems such as Denis, TLICS (Thoracolumbar Injury Classification and Scoring System), and McCormack Load Sharing and radiographic parameters such as Superior Inferior Endplate Angle (SIEA), Body Height (BH), Local Kyphosis (LK), Interspinous Distance (ISD), and Interpedicular Distance (IPD) were investigated in these patients for each imaging method. Statistical analysis was performed using SPSS (Version 21). **Result:** The ISD and LK and BHp (Body Height Posterior) were significant predictors of PLC injury. On radiographs, the mean LK with and without PLC damage was 25.67° and 20.92°, respectively ($p<0.001$). The ISD difference was 6.75 mm in cases with PLC damage and 2.84 mm in cases with an intact PLC ($p<0.0001$). In CT images, the mean LK was 25.77° in cases with PLC damage and 18.63° in cases with an intact PLC ($p<0.037$). The ISD difference was 4.14 mm in patients with PLC damage and 2.19 mm in patients without PLC damage ($p<0.002$). The BHp difference was 9.44 mm in cases with PLC damage and 11.09 mm in cases without PLC damage ($p<0.002$). **Conclusion:** The current study suggests formulating a predictive radiological index to identify PLC injury successfully. These guidelines can be very helpful in emergency room decision-makings, especially when the cost, availability, and time of performing MRI are important concerns in patients with multiple trauma.

Article info:
Received: XX
Accepted: XX
Available Online: XX

Keywords:
CT scan imaging, Posterior ligamentous complex, Thoracolumbar, Burst fracture

* Corresponding Author:
Khatereh Asadi, Ph.D. student
Guilan Road Trauma Research Center, Guilan University of Medical Sciences, Rasht, Iran. Tel: 13333368773. Email: khatereh70762@yahoo.com