

## **Abstract**

### **BACKGROUND:**

Lumbar puncture (LP) is an essential procedure in the diagnosis and treatment of several critical situations. This procedure is routinely performed by palpating external landmarks to find the most appropriate inter-spinous space. In the current study, we compared surface landmark and ultrasound (US) guided LP in different aspects.

### **MATERIALS AND METHODS:**

This clinical trial study was conducted at the emergency department (ED) of a teaching hospital from March 2009 to March 2010. Eighty patients were allocated randomly in two equal groups. In first group, LP was performed by US-guided method and in the control group by palpation of external landmarks of spinal column. Pain score, number of attempts for successful dural penetration, numbers of traumatic LP, and procedure time were compared between two groups. The performance of US-guided LP was assessed with regard to body mass index (BMI) of patients too.

### **RESULTS:**

The mean of procedure time and pain scores were markedly higher in land mark group in comparison to US group ( $6.4 \pm 1.2$  and  $7.4 \pm 1.1$  vs.  $3.3 \pm 1.2$  and  $4.4 \pm 1.4$  respectively). Number of attempts and number of traumatic LPs were significantly lower in US group too. In patients with different subgroups of BMI, US-guided LP showed better results and less complication when compared with surface landmark guided technique. All of these results were statistically significant.

### **CONCLUSION:**

This study showed that US was able to find pertinent landmarks to facilitate the LP in patients admitted to ED and resulted in less pain and less time wasting. Moreover, patients who have high BMI may benefit more than others.