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ELECTRO-ACUPUNCTURE FOR BLADDER FUNCTION RECOVERY IN PATIENTS UNDERWENT SPINAL ANAESTHESIA

Hypothesis / aims of study
To investigate the effect of electro-acupuncture (EA) on recuperating bladder function in patients underwent spinal anaesthesia.

Study design, materials and methods
61 patients underwent spinal anaesthesia performed with tetracaine due to lower extremity surgery were recruited to our study and divided into EA and control group randomly. Patients in EA group received EA therapy whereas ones in control group were not given any intervention when sensory level of spinal anaesthesia receded to T10. The acupoints including CV3 (Zhong Ji), CV4 (Guan Yuan) and bilateral ST29 (Gui Lai) were needled with the stimulation of a low-frequency (2Hz) continuous wave for 30 minutes. The time to voluntary micturition, voided volume and infusion volume were measured and compared between two groups. With a minimum of 30 patients per group, we had 80% power to detect a change in the time to voluntary micturition of 57ml, in voided volume of 80ml and in infusion volume of 196ml.

Results
The patients' demographic and measurements at baseline (sensory level of spinal anaesthesia receded to T10) are shown in *Table 1*. The patients in EA group presented a shorter time to voluntary micturition (P<0.001). However, the voided volume and infusion volume had no significant difference between two groups. (*Table 2*) Furthermore, the EA group showed a lower proportion of patients whose voided volumes were more than 400ml compared with control group (16.1% vs. 53.3%, P<0.01).

Interpretation of results
The bladder function is regulated by supraspinal and medullary centres via autonomic and somatic pathways. The spinal anaesthesia may interrupt the micturition reflex, resulting in detrusor blockade[1]. The duration of detrusor blockade allows the bladder volume to significantly exceed pre-anaesthesia bladder capacity. Once the bladder become sufficiently over-distended, voiding remains impaired after return of function. To avoid occurrence of this impairment, some attempts, such as restrictive fluid regimens or α-adrenoceptor blockers, have been used[2]. However, these therapeutic strategies cannot meet all the clinical needs for the limited effectiveness and applying fields. In the study we find that EA therapy not only shortens the time that patients recover voluntary micturition, but also reduces the percentage of patients with over-distended bladder. It suggests that EA may facilitate bladder function recovery after detrusor is blocked by spinal anaesthesia. The possible mechanisms include the regulation for autonomic nervous system and enhancement of endorphin release[3], which can accelerate recovery of detrusor function. In addition, EA may also play a role of adjuvant therapy for postoperative pain, which eliminates its deleterious effect on bladder function.

Concluding message
In conclusion, our study suggests that EA has a positive effect on bladder function recovery in patients underwent spinal anaesthesia.

Table **1. Patient characteristics and measurements at baseline**

	EA Group	Control Group
Number	31	30
Age(yrs)	54.6±5.5	53±5.1
Gender		
Male	10	9
Female	21	21
Height(cm)	164.4±0.4	164.5±0.5
Weight(kg)	68.7±0.7	66.9±0.6
SBP(mmHg)	115±12	114±13
DBP(mmHg)	66±16	68±11
MAP(mmHg)	83±14	83±10
HR	72±8	72±9

Values are given as mean ± standard deviation. EA: electro-acupuncture; SBP: systolic blood pressure; DBP: diastolic blood pressure; MAP: mean arterial pressure; HR: heart rate.

Table 2. Time to voluntary micturition, voided volume and infusion volume in two groups

	EA Group	Control Group
Time to urinate (min)	228±78	313±91*
Urine volume (ml)	339±109	361±179
Infusion volume (ml)	1631±270	1673±303

Values are given as mean ± standard deviation. Difference was analyzed by two-sample t-test between two groups. * *P* <0.001 vs. EA group. EA: electro-acupuncture.

References

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Disclosures

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