Awake Transcatheter Aortic Valve Implantation with Ultrasound-Guided Nerve Block: a case series.

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Background

Transcatheter aortic valve implantation(TAVI) is an well-established alternative in treating patients with severe aortic stenosis. TAVI has been mostly done under general anesthesia or sedation. However, both methods could bring considerable risks in this fragile patient group. Here we purpose using ultrasound-guided regional anesthesia in awake patient undergoing TAVI procedure.

Figure1. Echo image of ilioinguinal/iliohypogastric block. Arrow marks the fascia plane between IO and TA, where nerves and vessels lie. ASIS: anterior superior iliac spine; EO: external oblique muscle; IO: internal oblique muscle; TA: transverse abdominis muscle.

Figure 2. Echo image after local anesthetics injection. Arrow marks the needle. LA: local anesthetics; ASIS: anterior superior iliac spine.

Methods

During August, 2015 to May,2016, 13 patients whom indicated for TAVI was included. After standard monitors and invasive hemodynamic monitors were applied, ilioinguinal/iliohypogastric nerve were identified and blocked under real-time ultrasound guidance(Fig.1,2). TAVI procedure was then proceed. All patients were sent to ICU for postoperative care.

Results

All patients tolerated the procedure well. None were converted to general anesthesia. Mean procedure time was 156±36 minutes. Mean ICU stay was 2±1.5 days. No patient has post procedural neurologic deficit.

Tabel. 1	Mean	SD
Gender*		
Male	7 (53.8%)	
Female	6 (46.1%)	
Age	78.80	11.65
BH	157.14	6.60
BW	57.50	8.92
Preprocedural AVA (cm ²)	0.67	0.24
Preprocedural EF (%)	65.68	14.85
Anesthetic duration(min)	30.00	10.00
Procedure duration (min)	156.23	36.20
Hospital Stay (day)	11.23	5.28
ICU Stay (day)	2.08	1.55
	Median	25P-75P
Norepinephrine (mcg)**	17.5	5 to 30
Midazolam (mg)**	0.50	0 to 0.5
Alfentanil (mg)**	0.05	0.03 to 0.1
Vascular complications*	15.38% (2/13)	
Neurologic complications	7.69% (1/13)	
*		
GA conversion *	0% (0/13)	

AVA: aortic valve area; EF: ejection fraction.

* Data show as number and percentage.

** Data not normally distributed show as median and 25 to 75 percentile.

Conclusion

Minimal physiological disturbance, fast recovery are valuable for this fragile patient group. Awake TAVI avoids the possible physiologic disturbance of sedation towards respiratory and cardiovascular system. With ultrasound guidance, maximal analgesia could be achieved with minimal complications. Crosstalk between cardiologist, regional and cardiac anesthesiologist is important for optimize perioperative care in TAVI patients.