

P 2-124

Effects of mirabegron in blood pressure for patients with spinal cord injury at the level above T6

In-Kyoung Cho^{1*}, Seok Hee Han¹, Joo Hwan Jung¹, Bum Suk Lee^{1†}

National Rehabilitation Center, Department of Rehabilitation Medicine¹

Objective

Patients with spinal cord injury (SCI) usually have disturbed function of lower urinary tract. Antimuscharinic medication for neurogenic detrusor overactivity (NDO) is frequently discontinued due to side effects or lack of efficacy. Mirabegron is the adrenergic beta-3 receptor agonist for use in neurogenic bladder. It mediates relaxation of the detrusor muscle during the storage phase, thus increases bladder storage capacity. This study aims to observe the changes in urodynamic factors in patients with spinal cord injury at the level of T6 and above who do not present autonomic dysreflexia under treatment of mirabegron.

Method

Medical records of 7 patients with chronic SCI at the level of T6 and above admitted to the one single spinal cord center, South Korea, from April 2015 to April 2018 were collected and reviewed retrospectively. We included all consecutive 7 adults with chronic SCI at the level of T6 and above who did not have autonomic dysreflexia before and during first UDS, treated with mirabegron 50mg for a period of at least 6 months between first UDS and second UDS. Dermographic data, type of bladder management, previous NDO therapy and urodynamic Results before and after treatment, and blood pressure during UDS were evaluated. Descriptive statistical analysis were performed with SPSS version 20.

Results

Among 7 SCI patients, regarding the American Spinal Injury Association (ASIA) impairment scale, 3 patients are complete injury (AIS-A) and 4 patients are incomplete injury (AIS-B,C,D). Mean duration of injury is 83.9 months. All of them had no autonomic dysreflexia in first UDS and after the study they are treated with mirabegron for the reasons such as leakage, low capacity, VUR, etc. Table 1 summarizes the characteristics of the study group. We observed a significant increase of highest systolic BP (systolic BP from 115.0 to 152.7mmHg, P=0.028, diastolic BP from 76.6 to 101.0, P=0.028). Increase of BP above 20mmHg from basal BP was shown in 6 patients out of 7 patients. The maximum capacity of bladder increased from 364 to 437ml, P= 0.128, the compliance increased from 15.4 to 51.6 ml/cmH₂O P=0.345. Maximal detrusor pressure decreased from 36.4 to 22.4, P=0.176. Noxious stimulus such as ingrowing toenails, pressure ulcers, UTI is not presented in the study group.

Conclusion

The measured BP during UDS was significantly increased after the use of mirabegron despite of the improvements in urodynamic parameters such as compliance of bladder, maximal detrusor pressure. This inconsistency between the changes of UDS parameters and that of BP may be attributed to the use of mirabegron based on this study. Placebo-controlled studies are necessary to verify these Results.

Subject number	Age, yr	Sex	Duration of Injury, mo	Level of injury	ASIA grade	Medication (pre)	Medication (post)	Reason for medication change
1	60	M	96	C3	C	Propiverine	Propiverine, Mirabegron	High Pdet Max Leakage
2	57	M	44	T4	A	Fesoterodine	Propiverine, Mirabegron	Leakage
3	26	M	40	T1	A	Tolterodine	Mirabegron	Leakage
4	48	M	208	C4	C	Propiverine Oxybutynin Trosipium	Propiverine Oxybutynin Mirabegron	VUR
5	18	M	47	T3	B	Oxybutin, Solifenacin Tolterodine	Oxybutin, Solifenacin Propiverine, Mirabegron	Leakage Low capacity
6	58	F	52	T3	B	Fesoterodine, Propiverine,	Solifenacin, Propiverine, Mirabegron	Leakage Low capacity
7	47	F	100	C4	A	Propiverine, Imipramine	Propiverine, Mirabegron Imipramine	Leakage

	pre	post	P
Presence of elevation of systolic BP > 20mmHg during UDS	0	6	*0.031
Basal systolic BP (mmHg)	115.6 (89-135)	112.6 (89-132)	0.345
Basal diastolic BP (mmHg)	73.7 (58-99)	76.6 (53-95)	0.866
highest systolic BP during UDS (mmHg)	115.0 (61-136)	152.7 (121-173)	*0.028
highest diastolic BP during UDS (mmHg)	76.6 (58-90)	101.0 (74-125)	*0.028
Leakage (n)	3	1	0.500
Capacity of bladder (ml)	364.7 (85-550)	437.1 (319-550)	0.128
Compliance of bladder (ml/cmH2O)	15.4 (2.8-33.8)	57.6(12.2-252.8)	0.345
Maximal detrusor pressure (cmH2O)	36.4	22.3	0.176