

Comparison of 6months outcomes and side effect of sacral nerve stimulation and Botox-A injection in women with refractory overactive bladder : A systematic review and meta-analysis

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Purpose

To assess whether sacral nerve stimulation (SNS) is superior to botulinumtoxin A (Botox-A) in the refractory overactive bladder(OAB).

METHODS

Key words were searched in: PubMed, EMBASE and Cochrane library with "Botulinum Toxin A", "botulinum type A toxin", "Onabotulinumtoxin A", "Sacral nerve stimulation", "Sacral neuromodulation", and "refractory overactive bladder". Randomized and nonrandomized controlled trials evaluating all women who underwent SNS and Botox-A injection were included. A data extraction tool was used for data collection. The outcomes, side effects and cost-effectiveness value of both procedures was compared in meta-analysis.

Fig 1. Three trails enrolling 628 patients (SNS group=303; Botox-A group=325) reported the changes in OAB symptoms after SNS intervention. The results indicated women with refractory OAB receiving SNS gained similar improvement in OAB symptoms with botulinumtoxin A (Botox) injection [risk ratio(RR)0.88,95% CI 0.63-1.23].

	Botox-A		SNM		Odds Ratio		Odds Ratio	
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% Cl	
Cindy L 2016	42	127	48	99	50.3%	0.53 [0.31, 0.90]	+	
Cindy L 2018	113	159	106	139	45.6%	0.76 [0.45, 1.29]		
Rachira Singh 2015	17	39	7	65	4.1%	6.40 [2.34, 17.54]		
Total (95% CI)		325		303	100.0%	0.88 [0.63, 1.23]	•	
Total events	172		161					
Heterogeneity: Chi ² =	18.68, d	f = 2 (F	< 0.00					
Test for overall effect:	Z = 0.76	6 (P = 0	.45)	Favours (experimental) Favours (control)				

Fig 2. Three trails enrolling 628 patients (SNS group=303; Botox-A group=325) reported the changes in OAB symptoms after SNS intervention. There was no significant difference in failure rate between Botox-A group and SNS group [risk ratio(RR)1.10,95% CI 0.79-1.55].



RESULTS

3 studies with 853 patients evaluate the effectiveness and safety, the results indicated women with refractory OAB receiving SNS had similar improvement in OAB symptoms with Botox-A injection [risk ratio(RR)0.88,95% CI 0.63-1.23]Fig1. The Botox-A and SNS group had no significantly difference in failure rate of treatment [risk ratio(RR)1.10,95% CI 0.79-1.55]Fig2. But, the complication rate, such as urinary tract infection, was lower in SNS group than in Botox-A group [risk ratio(RR)3.65,95% CI 2.57-5.18]Fig3. 3 studies assess and compare the costs and effects value of either procedure from a societal perspective. The result showed that SNS is costeffective after 5 years and 10 years compared to Botox-A.

CONCLUSIONS

Compared with Botox-A, SNM is the superior choice for refractory OAB based on the same efficacy, lower complications and better cost -effectiveness. However, clinical -decision making is still complex and exciting task for doctors, and more studies with large sample and long -term is still needed.

Fig 3. Three trials with total of 771 patients (SNS group=328; Botox-A group=389) reported the complication after these two treatment. The pooled results showed significantly lower complication rate (urinary tract infection) of after SNS than Botox-A [risk ratio(RR)3.65,95% CI 2.57-5.18].

	Botox-A		SNM		Odds Ratio		Odds Ratio	
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% CI	
Cindy L 2016	66	191	20	178	39.3%	4.17 [2.40, 7.25]	+	
Cindy L 2018	69	159	27	139	47.3%	3.18 [1.88, 5.37]		
Rachira Singh 2015	17	39	11	65	13.5%	3.79 [1.53, 9.39]		
Total (95% CI)		389		382	100.0%	3.65 [2.57, 5.18]	•	
Total events	152		58					
Heterogeneity: Chi ² =	0.50, df	= 2 (P	= 0.78);			100		
Test for overall effect:	Z = 7.2	5 (P < C).00001)		Favours (experimental) Favours (control)	100		