

Abstracts

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01AP06-6 Neuromuscular blockade, recovery and postoperative pain after laparoscopic-assisted vaginal hysterectomy with low-pressure pneumoperitoneum versus normal-pressure

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Background and Goal of Study: Laparoscopic assisted vaginal hysterectomy (LAVH) is often performed for older women. High pneumoperitoneum pressure can affect the patient's statement, while low pressure reduces visualization and lengthens the operation. The use of deep neuromuscular blockade (NMB) improves surgical conditions during a low-pressure pneumoperitoneum¹. **The aim** of our study was to determine the effect of pneumoperitoneum pressure on muscle relaxant consumption, recovery after laparoscopic intervention and early postoperative pain. **Materials and Methods:** Having obtained the informed consents, 48 women (scheduled for LAVH) were randomized into 2 groups: LP (n=23) low-pressure pneumoperitoneum (8 mmHg) and NP (n=25) normal-pressure one (12 mmHg). NMB was established with atracurium. Episodes of alarm from the insufflator led to NMB was deepened. Pain was assessed on a visual analogue scale (VAS) in 1, 5 and 24h after surgery. Other endpoints were surgeons' satisfaction; and time to mobilization. Both groups were similar in relation to physical status (ASA II). Data are presented as mean±SD or % patients with parameters. Mann-Whitney U test was used for statistical analysis, *p<0.05 was considered as statistically significant for comparison between groups.

Table.

Indicators	Low-pressure (n=23)	Normal-pressure (n=25)	p
Duration of surgery (min)	120.±12.3	110.5±4.5	0.04
Extubation (min)	22.7±5.1	14.4±3.2	0.02
Atracurium (mg)	80.9±8.1	70.1±4.1	0.01
VAS-1h (mm)	18±7.4	22.7±6.5	0.04
VAS-5h (mm)	14.4±3.	20.3±2.5	0.001
VAS-24h (mm)	13.2±2.9	14.0±1.4	0.5
Ambulation (min)	300.2±134.02	320±116.6	0.04
Surgeons' satisfaction (%)	68	84	0.03
Episodes of alarm	18.4±2.4	9.9±1.4	0.001

Results and Discussion: As the duration of the operation in LP was longer, and extubation of patients was performed later than in NP (Table). Surgeons' satisfaction was 16% less in LP. The consumption of atracurium was 8.7% less in NP (p=0.06). Postoperative pain was significantly less in LP, both at 1 and 5 hour, and did not differ after 24 hours. Women started walking earlier after the operation in LP. Correlation were revealed between pressure of pneumoperitoneum and the VAS level after 1 hour (0.73, p=0.03) and 5 hours (0.65, p=0.04). Surgeons' satisfaction correlated with consumption of atracurium (0.68, p=0.04).

Conclusions: Low-pressure pneumoperitoneum was associated with increased muscle relaxants consumption and cuted surgeons' satisfaction. However it can reduce early postoperative pain and hasten mobilization.

References:

- Madsen MV et al. Dan Med J. 2017;64(5): A5364.

01AP06-7 Rocuronium does not affects on serum tryptase concentration during general anaesthesia in overweight and obese patients.

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Background and Goal of Study: Both female sex and overweight or obesity (Body Mass Index (BMI) ≥ 25) are risk factors of pathological activation mast cells and increasing basal serum tryptase concentration (STC). It is important to determine the safety of using rocuronium, which is the most common neuromuscular blocking

agent (NMBa) causing perioperative hypersensitivity reactions, during general anaesthesia in these groups of patients. The aim of study was to present changes of STC during combined - volatile general anaesthesia with using rocuronium in overweight and obese female patients.

Materials and Methods : The study was accepted by the Ethical Commission of Medical University in Białystok, Poland. The study was conducted in two female groups. Patients in Group I (66 gynaecological operations) undergoing volatile general anaesthesia with rocuronium, in Group II (60 thyroid operations) undergoing volatile general anaesthesia without using any NMBa. Measurements of STC before (STC 0) and after anaesthesia (STC 1) were performed.

Results and Discussion: Serum tryptase concentrations before anaesthesia in patients with normal Body Mass Index, overweight and obesity were not statistically significant, but the highest value (3.44 mcg/ml) was observed in obese patients (Figure 1). In both study groups STC 1 non-statistically decreased in all categories of BMI (Figure 2). Serum tryptase concentration after anaesthesia did not correlate with intubating dose and total dose of rocuronium. Neither STC 0 nor STC 1 presented correlation with BMI. Overweight and obesity did not induced specific changes of STC before and after volatile - combined general anaesthesia with rocuronium and it did not affect specifically on STC in these groups of patients.

Conclusions: The using of rocuronium as a component of combined - volatile general anaesthesia in overweight and obese female patients was safe and did not cause perioperative hypersensitivity reactions assessed by changes in serum tryptase concentrations. Due to selection of the study group, the explanation of the rocuronium effect on serum tryptase concentration require testing on larger and more diverse group.

References:

- Mertes P.M, Volcheck G.W. Anaphylaxis to neuromuscular-blocking drugs. Anesthesiology 2015; 122: 5-7

01AP06-8 Outcomes of Deep and Moderate Neuromuscular Blockade among Individuals undergoing Surgical Procedures: A Systematic Review of Randomized Controlled Trials

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Background and Goal of Study: While neuromuscular blockade (NMB) facilitates intubation and can improve surgical conditions, published data conflict on the optimal level of NMB. We examined the impact of deep (d) and moderate (m) NMB on perioperative outcomes using a systematic review and meta-analysis framework. **Materials and Methods:** PubMed, EMBASE, the Cochrane Library, DARE and grey literature were searched through September 14, 2018 to identify randomized controlled trials (RCTs) comparing the effects of dNMB with mNMB. Meta-analyses using random-effect models calculated pooled estimates with 95% confidence intervals (CI). Heterogeneity between studies was examined using I² statistics and sensitivity analyses were used to explore the robustness of the findings. Analyses were conducted using R version 3.5.1.

Results and Discussion: Of 6,975 retrieved citations, 17 RCTs met study selection criteria, including 15 abdominal laparoscopic surgeries and 2 laryngeal microsurgies. Among included studies, dNMB definitions varied, ranging from post-tetanic count 1 to 5, with mNMB definitions ranging from train of four counts 1 to 3. Overall risk of bias was low in 6 studies, moderate in 6, and unclear in 5. Nonetheless, across all surgeries, compared to mNMB, dNMB had better surgical-field rating with high heterogeneity, decreased mean post-operative pain score in the recovery room, and a lower likelihood of need to increase intraabdominal pressure during surgery, both with low heterogeneity (Table 1). There were no statistically significant differences in duration of surgery, length of stay, and postoperative nausea/vomiting between dNMB and mNMB groups. In evaluating the impact of depth of NMB by surgery type, the treatment effect for post-operative pain, surgical field ratings, and length of stay varied.

Conclusions: While results show variations in included studies by NMB definitions, deep NMB led to a better surgical field and less pain compared to moderate NMB. Findings suggest where clinically feasible, the use of dNMB may be preferred over mNMB to optimize surgical conditions and ultimately improve both surgical and patient outcomes.

Table 1. Parameters Estimates on the Effect of dNMB vs. mNMB for Peri-Operative Outcomes

Peri-Operative Outcomes	# of Studies	Type of Variable	Summary Statistics	Pooled Estimates with 95% CI	P-value	I ² Statistic ^c	
Surgical Outcomes	Surgical field ratings	6	Continuous	pSMD ^d	0.51 (0.05, 0.98)	0.031	77.2%; High
	Increase in IAP level ^a	4	Binary	pOR ^e	0.38 (0.20, 0.72)	<0.05	0%; Low
Patient Outcomes	Post-operative pain at PACU	5	Binary	pOR	-0.51 (-0.70, -0.31)	<0.0001	0%; Low
	Post-operative nausea/vomiting at PACU	4	Binary	pOR	0.62 (0.27, 1.43)	0.2639	23.1%; Low
Resource Use	Duration of surgery (minutes)	11	Continuous	pMD ^f	-1.85 (-4.92, 1.23)	0.240	72.8%; Low
	Length of recovery room stay (minutes)	3	Continuous	pMD	-4.36 (-10.83, 2.11)	0.186	0%; Low
	Length of hospital stay (days)	3	Continuous	pMD	-0.68 (-1.19, -0.19)	0.295	63.0%; Moderate

Abbreviations: CI: confidence intervals; IAP: intra abdominal pressure; PACU: post anaesthesia care unit/recovery room; pMD: pooled mean difference; pOR: pooled odds ratio; pSMD: pooled standardized mean difference.
 Note:
^aIncrease in IAP level from either 8 to 12 mmHg OR 10/12 to 15 mmHg
^bThe estimate of pOR for dNMB vs mNMB < 1 with CI excluding 1 indicates that dNMB is more effective than mNMB.
^cThe estimate of pMD (pSMD) for dNMB vs mNMB < 0 with CI excluding 0 indicates that dNMB is more effective than mNMB.
^dThe I² statistic reflects heterogeneity, i.e. the percentage of variation across included studies which was classified as low (<25%); moderate (25-75%); and high (>75%).