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Features of spinal anesthesia in the elderly critical patients wich limited resources . (Tbilisi,Georgia)

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The paper describes support of surgery with the spinal anesthesia in the older and elderly critical patients. The analysis of 37 cases are discussed. Based on the specificity of the surgery, the patients were divided into 2 groups. The first group (18 cases) made of the patients who under went prostate resection for adenoma. The second group (19 cases) made of the patients who underwent limb amputation in the upper third of the thigh due to foot gangrene on the background of the diabetes.A number of spinal anesthesia features are found in the patients of both groups, in them the anesthesia develops quickly, as well as the duration of drug action increases. On the one hand increases the risk of hypotension and bradycardia (vasovagal effect), and on the other hand the risk of arterial hypertension and tachycardia (reactive vasoconstriction), especially in patients with underlying arterial hypertension and cardiovascular disease.The advantage of the spinal anesthesia is its minimal pharmacological load, effect of postoperative analgesia and significant cost-effectiveness.
Key words: Critical care medicine, Spinal anesthesia, Reactive vasoconstriction.

Introduction: The level of Social protection and medical care development reflects the country's economic situationto some extent.

The majority of the Georgia's population consists of so called most unprotected group -the aged people whose decent life largely depends on the material and medical care support by the government.

Georgia is a developing country, in recent years the introduction of universal insurance program provides almost all the critical patients' care. The government is trying to find the optimal ways of medical care in the situation of limited resources. Therefore, economic evaluation of the methods of anesthesia for critical patients is a topical question.

Anesthesiologic supportof critical patients is a subject of constant concern. They often undergo surgery under vital indication, also it should be taken into consideration that the critical situation is accompanied by complications (endogenous intoxication, shock, coagulopathy, metabolic disorders), which are a natural phenomenon and have the polymorphic nature.

Our objective was to reveal some of the changes of readings in the homeostasis of the older and elderly critical patients,during lower extremity and pelvic organ surgery in the setting of spinal anesthesia support, as well as to evaluate the economic cost in the situation of limited resources.

Materials and Methods: The spinal anesthesia support of surgery was conducted in 36 patients.The popularity of spinal anesthesia is conditioned by its technical simplicity of spinal anesthesia, suspension of neuro-vegetative reaction, nociception afferentation blocking, and good myorelaxation (1). The spinal anesthesia causes minimal pharmacological load on the body, decrease of blood loss volume, also provides effective postoperative analgesia;Also reduction of the number of complications, associated with respiratory disorders.Based on the specificity of the surgery, the patients were divided into 2 groups. The first group (18 cases) made ofthe patients who underwentprostate resection foradenoma. The second group (19 cases) made ofthe patients who underwent limb amputation in the upper third of the thigh due to foot gangrene on the background of the diabetes.Age of the patients was over60. Physical status ASA-II and ASA-III. The duration of surgery was 62 ±15 minutes.All patients underwent the preoperative period examinations and preparation by admitted in our clinic methods: ECG, echocardiography, abdominal and pleural cavity ultrasound examination, coagulogram, creatinine and urea in the blood, electrolyte K, Na, Mg, Cacontent in blood serum, common urine test, common blood count, and acid-base balance.Contraindications to spinal anesthesia was the generallyadmitted clinical status - coagulopathy, hypovolemia, decreased ejection fraction (<40%), high intracranial pressure, allergy, infection at the puncture area.

Premedication –all patients received the same: 30-40 minutes before the surgery done: Morphini hydr.chl.1%-1.0 ml, Dimedrol: 1%-1.0; Atropini0,1%-0.5 ml s/c.

Patients received pre-load of crystalloid infusion of 0.9% NaCl or Ringer 8-10 ml/kg/hr. Subarachnoid space puncture was done at L_{II} –L_{III} levels by generally accepted method of Spinocan G-25. Bupivocaini0.5% 3.34± 0.04 mlwas usedfor spinal anesthesia. In all cases subarachnoid blockade was carried out successfully. The analgesia was adequate.

Sensory blockade lasted for 154.±30.11min. The motor blockade was longer of 182±20.5 min. Continuous monitoring of blood pressure, heart rate, SpO2was carried out in the process of anesthesia; their readings were evaluated: 1) before the surgery; 2) After the occurrence of spinal blockade. 3) 30 minutes after the anesthetic injection; 4) 60 minutes after the anesthetic injection; Table 1.2. Results and Discussion: The consciousness was evaluated through the constant direct contact with the patient. Based on the psycho-emotional status of the patient, intraoperative sedationwas done only in 3cases: by I/Vinjection of Diazepam 0.07 ±0.02 mg/kg.In both groups of patients (Table N 1.2)normo- and para-sympathicotonia was noted. The vegetative nervous system imbalance should be necessarily mentioned, especially in II group patients. There was an increase in blood pressure, heart rate (HR) readings and episodes of SpO2 decrease to 92- 93 in 50% of patients, while inI group patients the moderate hypoxemia was noted only in rare cases.

In I group patients 3 cases of bradycardia and hypotension development was noted, caused by the blockade of sympathetic nerve fibers, so-called vasovagal reaction in the period of 5-15 minutes after anesthetic injection. With the purpose of hypotension correction we were raising the infusion rate by1.5 - 2 times, if necessary, 1 mg mezatoninjection, in case of bradycardia development, additional Atropini 0.1% 0.05-0.07 mg/kg.

In II group patients, there were 3 cases of hypertension, all the three patients had concomitant coronary artery disease, arterial hypertension of II-III stage. In one case the patient had developed congestive heart failure in the form of bilateral hydrothorax, on the backgroundof cardiovascular disease; the patient was

taken to surgery 2 days after evacuation of fluid from the pleural cavity –in all the three cases the arterial hypertension was accompanied by tachycardia of 100 ± 15 min.

All II group patients with the coronary heart disease, arterial hypertension of II –III stage, and chronic heart failure, were prescribed appropriate combination therapy: 1) decrease in peripheral vascular tone (peripheral vasodilators); 2) Strengthening the heart muscle contractility (digoxin); 3) Excretion of excess salt and liquid from the body (diuretics), oxygen therapy. The critical patients care servicecontinuedin intraoperative and postoperative periods. No lethal outcome occurred.

Monitoring of some indicators
The first group, Table N 1.

Stage	Indicators	Statistic review				
		Mean	Min	Max	±	P
1	TA	97,42	81	117	10,30	0,7
	HR minutes	71,37	52	92	12,07	0,03
	SPO² %	97,58	95	99	1,50	0,47
2	TA	90,84	73	114	10,83	0,001
	HR minutes	69,84	52	89	10,06	0,5
	SPO² %	96,47	94	99	1,58	0,0
3	TA	90,0	76	108	8,81	0,01
	HR minutes	63,0	49	87	8,61	0,001
	SPO² %	96,21	92	99	2,07	0,004
4	TA	89,50	72	112	11,16	0,001
	HR minutes	60,44	50	77	7,40	0,002
	SPO² %	96,13	92	98	1,63	0,001

Monitoring of some indicators
The second group, Table N 2

Stage	Indicators	Statistic review				
		Mean	Min	Max	±	P
1	TA	97,82	75	114	12,35	0,03
	HR minutes	80,41	57	120	17,39	0,5
	SPO² %	96,94	93	99	1,82	0,3
2	TA	87,07	74	102	9,18	0,00
	HR minutes	74,65	60	99	12,18	0,08
	SPO² %	95,35	92	99	2,32	0,001
3	TA	87,59	71	111	10,57	0,005
	HR minutes	66,88	45	97	12,14	0,001

	SPO² %	94,71	91	99	2,49	0,001
4	TA	90,40	74	113	10,50	0,012
	HR minutes	63,13	46	94	12,53	0,000
	SPO² %	95,73	91	99	2,55	0,115

The arterial hypertension in the process of anesthesia can be considered the reactive vasoconstriction, which develops above the blockade level. It leads to microcirculation disorders as a result of tissue hypoperfusion, and is considered a manifestation of tissue hypoxia (2). This phenomenon is more clearly seen in elderly patients with underlying diseases: arterial hypertension of II-III stage, cardiovascular function decrease (3).

Conclusion:Based on the above, we can conclude that a number of regional, and in particular, spinal anesthesia features are foundin the older and elderly patients. In themthe anesthesia develops quickly(5.0 ±2 min.), as well as the duration of drug action increases(180 ±40 min.). On the one hand increases the risk of hypotension and bradycardia (vasovagal effect), and on the other hand the risk of arterial hypertension and tachycardia (reactive vasoconstriction). The advantage of the regional anesthesia is its minimal pharmacological load, decrease inblood loss volume, effect of postoperative analgesia(180 ±40 min.),and significant cost-effectiveness.The economic expense of medications, used for spinal anesthesia, makes 20 ±2 GEL. This is a significant savings for critical patients, anesthesiologic support in the setting of limited resources.

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