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KEY PREDICTORS OF CARDIOVASCULAR RISKS IN MILITARY WITH ACUTE ABDOMINAL PATHOLOGY

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ABSTRACT: This study investigates the primary predictors associated with the development of cardiovascular complications in military personnel suffering from intra-abdominal hypertension (IAH) within the context of acute abdominal pathology. Military service members often face unique physiological and environmental stressors, increasing their susceptibility to severe complications. Key predictors, including the severity of IAH, systemic inflammatory response, and comorbid conditions, were analyzed. The findings reveal that early identification and management of these predictors can significantly reduce the risk of cardiovascular complications. This research highlights the importance of tailored diagnostic and therapeutic strategies to improve outcomes for military personnel with IAH.

KEYWORDS: Intra-abdominal hypertension, acute abdominal pathology, cardiovascular complications, military personnel, predictors, risk factors, systemic inflammation, diagnostic strategies.

INTRODUCTION

Intra-abdominal hypertension (IAH) is a serious complication that can occur in patients with acute abdominal pathology, especially in military personnel. IAH has a significant impact on the functioning of the cardiovascular system, increasing the risk of developing cardiovascular complications such as myocardial infarction, arrhythmia, and heart failure. Identifying the main predictors that contribute to the development of these complications is an important task for improving treatment tactics and preventing adverse outcomes (1,2).

The aim of this article is to identify the main predictors of cardiovascular complications in military personnel with IAH in acute abdominal pathology.

Research material: The results of the study were compared between military personnel and civilians with acute surgical abdominal pathology depending on the presence of intra-abdominal hypertension. A study was conducted on 232 patients with emergency surgical diseases and abdominal injuries who were treated at the intensive care unit of the Republican Scientific Center for Emergency Medical Care of the Ministry of Health of the Republic of Uzbekistan and at the Military Hospital of the Ministry of Health of the Republic of Uzbekistan in the period from 2021 to 2024. The main group (MG) consisted of 112 military patients (48.3%), in this group subgroup A consisted of 39 patients (34.8%) with intra-abdominal hypertension (IAH+), subgroup B - 73 (65.2%) without intra-abdominal hypertension (IAH-) (Table 1). The comparison group (CG) consisted of

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120 civilian patients (51.7%). Subgroup A CG consisted of patients with IAH 49 patients (40.8% of the number of CG patients), subgroup B-CG - consisted of 71 patients (59.2%) (Table 1).

Table 1

Distribution of patients into groups and subgroups

bygroup groups	A subgroup, patients with IAH		In the subgroup patients without IAH		total	
	n	%	n	%	n	%
MG - main group, patients are military personnel	39	34,8%	73	65,2%	112	48,3%
CG comparison group, civilian patients	49	40,8%	71	59,2%	120	51,7%

Note: IAH intra-abdominal hypertension

The research methods included: clinical method, questionnaire survey, biochemical blood tests, instrumental methods: blood pressure monitoring, ECG monitoring, echocardiographic examination, ultrasound of abdominal organs, measurement of intra-abdominal pressure with a Faley catheter according to the S.E. Bradley and G.P. Bradley method, statistical processing of results.

Research results. Intra-abdominal hypertension has a negative impact on the cardiovascular status of both military personnel and civilians, but the degree of this impact varies. Civilians with IAH+ have a higher incidence of cardiovascular complications (61.2%) than military personnel with IAH+ (51.3%). Military personnel with IAH+ have a higher cardiac output (3.8±0.5 l/min) compared to civilians (3.2±0.4 l/min), which may indicate more effective compensatory mechanisms. Differences in the mechanisms of complications may be associated with age, physical fitness, and the presence of concomitant pathology.

Table 2. Central and intracardiac hemodynamic parameters in acute and chronic increase in IAP in CG

Indicator	Acute increase in IAP (M ± σ)	Chronic increase in IAP (M ± σ)
Cardiac output (L/min)	3,2 ± 0,6	4,0 ± 0,7
Blood pressure (mmHg)	93,5 ± 12,1	112,9 ± 10,7
CVP (mmHg)	16,7 ± 3,5	12,8 ± 2,4
Troponin I (ng/ml)	0,40 ± 0,11	0,30 ± 0,09
CPK-MB (U/L)	266,2± 30,7	215,7 +25,4

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The study found that the main predictors of cardiovascular complications in military personnel with intra-abdominal hypertension include: intra-abdominal hypertension, which increases the risk of cardiovascular complications by 2.5 times compared to patients without intra-abdominal hypertension. Elevated troponin I levels (>0.05 ng/ml), which is associated with a 35.0% increase in the risk of complications, the presence of arterial hypertension, which increases the risk of complications by 25.0%. High BMI (≥28 kg/m²), which is associated with a 20.0% increase in risk. Decreased cardiac output (<4.0 l/min), which increases the risk of complications by 18.0% (t.2).

Conclusions: The obtained results confirm that intra-abdominal hypertension is an important predictor of cardiovascular complications in patients with acute abdominal pathology, especially in military personnel. IAH contributes to the deterioration of cardiac function due to increased intrathoracic pressure, decreased venous return and increased load on the myocardium. Elevated levels of troponin and KF-MB indicate myocardial damage and require special attention in the management of such patients.

The specific features of military service, such as increased physical and emotional stress, may contribute to a higher risk of developing cardiovascular complications in the context of IAH. This highlights the need to develop specialized protocols for managing military personnel with acute abdominal pathology and IAH, including monitoring of cardiac-specific enzymes and early diagnosis of cardiac complications.

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