Pulmonary Embolism during War: Challenges in treatment of Pulmonary Embolism after Combat Injury.

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AMOSOV NATIONAL INSTITUTE OF CARDIOVASCULAR SURGERY

STUDY OBJECTIVE

Evaluate

- Risks and dangerous conditions
- Best treatment options depending on the duration of PE
- Differences in the clinical course in military group

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AMOSOV NATIONAL INSTITUTE OF CARDIOVASCULAR SURGERY - NATIONAL MILITARY AND MEDICAL CLINICAL CENTER

- 36 MILITARY PATIENTS
- 26 CIVILIAN PATIENTS

METHODS

PE confirmed by chest CT angiography (including Quanaldi Score)

Combat injury

18-75 years

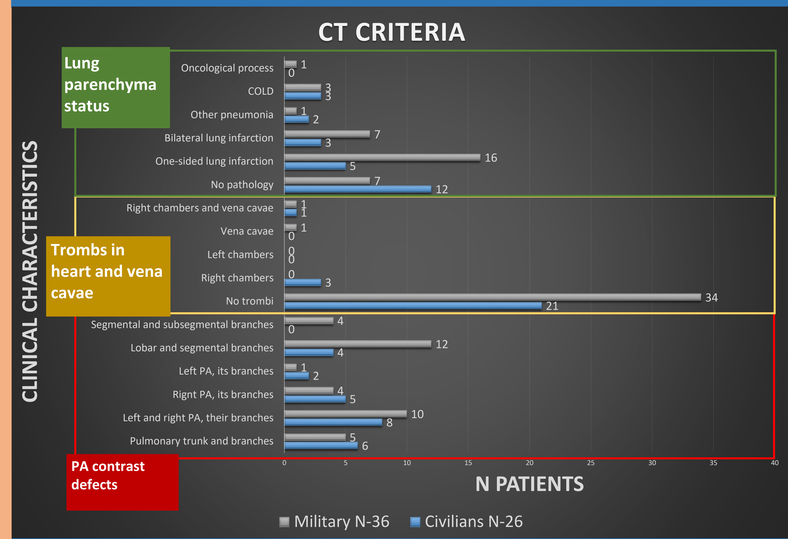
Echocardiography

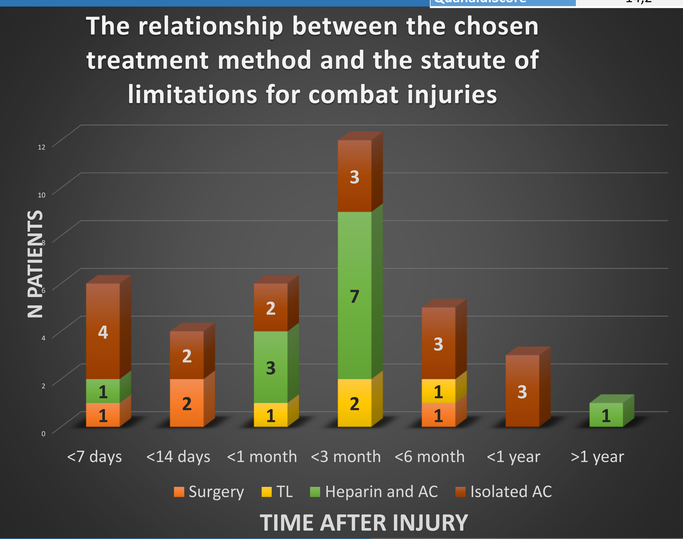
BACKGROUND

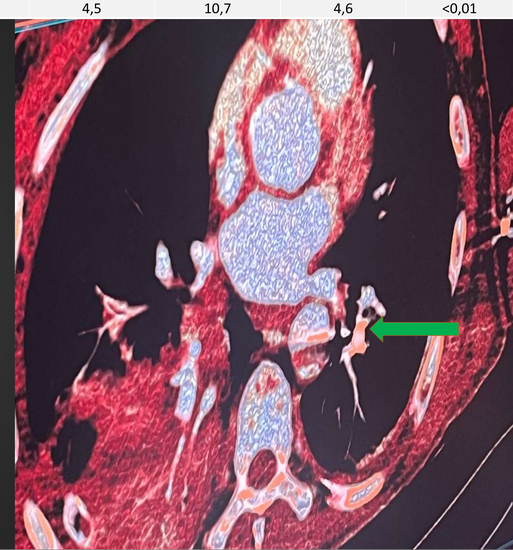
- Pulmonary embolism (PE) is a serious complication in the combat trauma population, significantly affecting mortality and making treatment difficult.
- The incidence of PE among trauma patients ranges from 0.35% to 24%. Incidance of early PE (within the first 3–4 days after injury) can account for up to 37% of cases and is often observed without prior deep vein thrombosis.
- In military settings, the choice of the optimal treatment strategy for PE is complicated by limited access to thrombolytic therapy and surgery, and by the risk of bleeding in those with multiple injuries.
- The number of scientific studies specifically related to PE after combat trauma remains extremely limited. Most of the available data do not take into account the current realities of combat operations in Ukraine. Often it is presented as just individual clinical cases.

RESULTS

Characteristic		Civilians N-26		Military N-36		P
		M	SD	M	SD	
Age		54,5	13,1	43,9	9,6	<0,001
		Civilians N-26		Military N-36		P
		N	%	N	%	
Sex	1. Male	17	65,3	36	100	<0,001
	2. Female	9	34,6	0	-	
PESI	1. I class	0	-	5	13,9	>0,1
	2. II class	9	34,6	13	36,1	
	3. III class	9	34,6	7	19,4	
	4. IV class	6	23,1	7	19,4	
	5. V class	2	7,7	4	11,1	
RVSP		69,5	19,6	42,4	10,9	<0,001
EDI		51,3	16,4	53,9	13,9	>0,1
ESI		20,9	12,5	22	7,1	>0,1
SI		30,2	7,5	31,8	8	>0,1
EF, %		60.9	9.6	59.4	4.8	>0.1
PT diameter, mm		34,6	3,6	29,3	5,5	<0,03
Right PA diameter, mm		26,3	2,9	21,3	1,8	<0,01
Left PA diameter, mm		25,5	4,4	22,4	2,5	>0,1
QuanaldiScore		14,2	4,5	10,7	4,6	<0,01

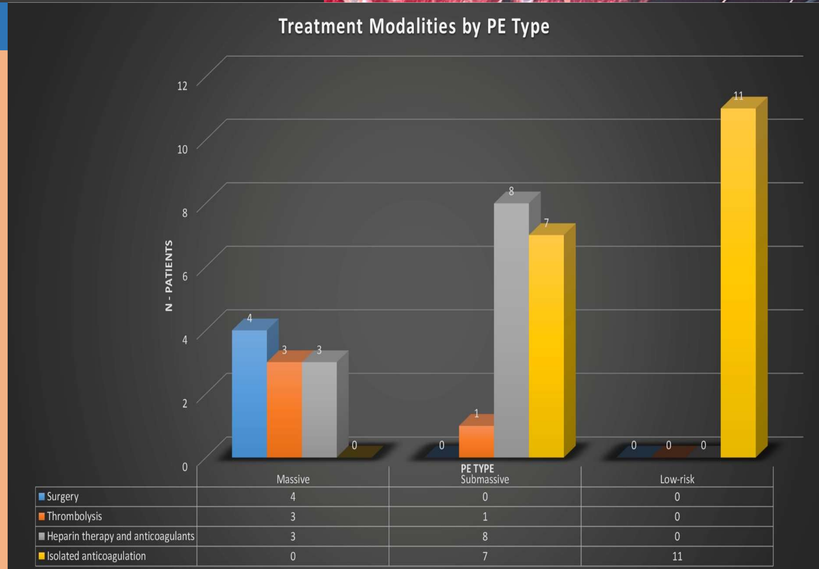






CONCLUTIONS

- Combat trauma is an important trigger for the development of PE, both directly (due to massive tissue damage and the initiation of the coagulation cascade) and indirectly - due to surgical interventions, a long immobilization period and post-traumatic thrombophlebitis.
- Massive and submassive forms of PE with a high risk level according to the PESI scale accounted for 27.7% and 44.4% of cases, respectively, in the military group, which requires more aggressive treatment tactics.
- Lung infarction is detected in 65.7% of military patients, which indicates the depth of damage to the lung parenchyma due to PE and can have a very severe course.
- The use of thrombolysis is limited in the military due to the high risk of bleeding against the background of fresh wounds - in most cases of massive and submassive PE in the early period after injury, surgical intervention is preferred.
- CT angiography and echocardiography remain key tools for risk stratification and treatment planning. Particular attention should be paid to the detection of thrombi in the right ventricle and vena cava.
- The lack of availability of modern catheter interventional techniques due to wartime conditions is a significant limitation to optimizing treatment.



	Massive	Submassive	Low-risk
Surgery	4	0	0
Thrombolysis	3	1	0
Heparin therapy and anticoagulants	3	8	0
Isolated anticoagulation	0	7	11