

The specificities of changes of progenitor and immune competent cells at processing bone marrow by electrical impulses and epinephrine

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In recent years (Zv. kheladze 2009y) for liquidation of critical conditions it is very important to manage the process of tissue and cells reparation injured under the influence of pathological processes. Georgian critical care medicine have already developed and patented management algorithm of the processes and methods of treatment with electrical impulses, plasma rays, nitroglycerin and epinephrine. (Zv. kheladze-2007y Zv. Kheladze-2009y and others). I represent the results of research of treatment by electrical impulses and epinephrine.

Key Words: Immune competent cells, Electrical impulses, Bone marrow.

Materials and methods:

There were investigated 30 patients (100%) in critical condition. From these during treatment with electrical impulses was investigated 30 patients, and with epinephrine-25. Clinical description of the patients is given in table #1-2. Female were 23, Male- 32 and age of patients was above 40 years. In 18 cases the critical condition was associated with an ischemic stroke, 13- with hemorrhagic stroke, 5-with post-reanimation disease, 8-with pneumonia, 4-with polytrauma, 4- with cardiogenic shock and 3-with cranial trauma.

Clinical description of patients by treatment with electrical impulses. (Table #1)

#	Age				Gender		Disease							Discharged	Died	Disability	Hard disability
	to-40	40- 60	60-80	80 and more	Female	Fale	Ischemic stroke	Hemorrhagic stroke	Post-reanimation disease	Pneumonia	Polytrauma	Cardiogenic shok	Cranial trauma				
30	1	6	17	6	11	19	10	7	3	4	2	2	2	11	19	4	7

Clinical description of patients by treatment with epinephrine. (Table#2)

#	Age			Gendger		Disease							Discharged	Died	Disability	Hard disability
	Patients	40- 60	60-80	80 and more	Female	Fale	Ischemic stroke	Hemorrhagic stroke	Post-reanimation disease	Pneumonia	Polytrauma	Cardiogenic shok				
25	4	11	5	12	13	8	6	2	4	2	2	1	10	15	2	7

The management of critical condition was performing by State standard about treatment of critical condition (Z. kheladze 2002) which contains: the artificial ventilation of lungs, recovering blood circulation, correction of acid-base balance, water and electrolytic balance, analgesic and sedation, antioxidant and antibacterial therapy and other medical events. Selection of the patients who would take a part in research was made according to the following criterions: the patient should be on artificial ventilation, cerebral coma by GSC should be 4-5 point, should not have had performed hem transfusion and immunity inducement therapy.

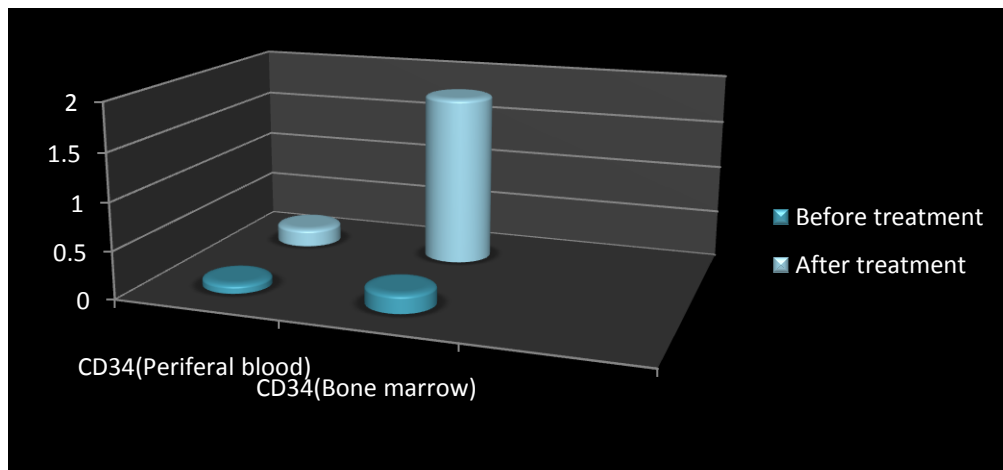
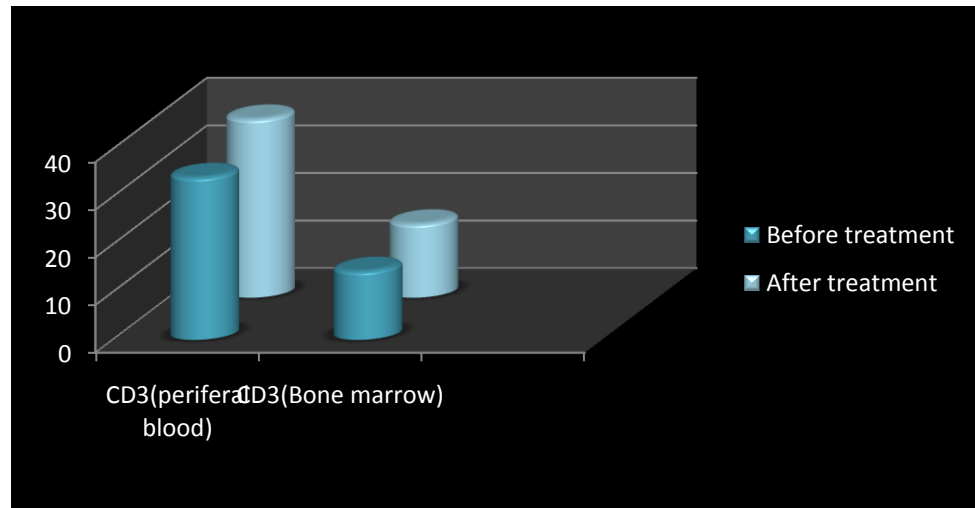
The stimulation of bone marrow with electric impulses occurred in the area of breast bone permanently during the first 48-168 hours of critical condition with device "Georgia-1".

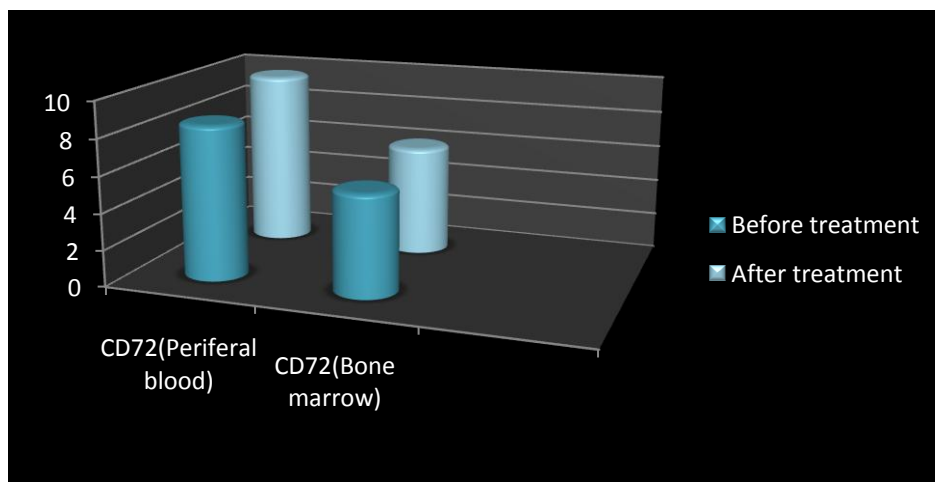
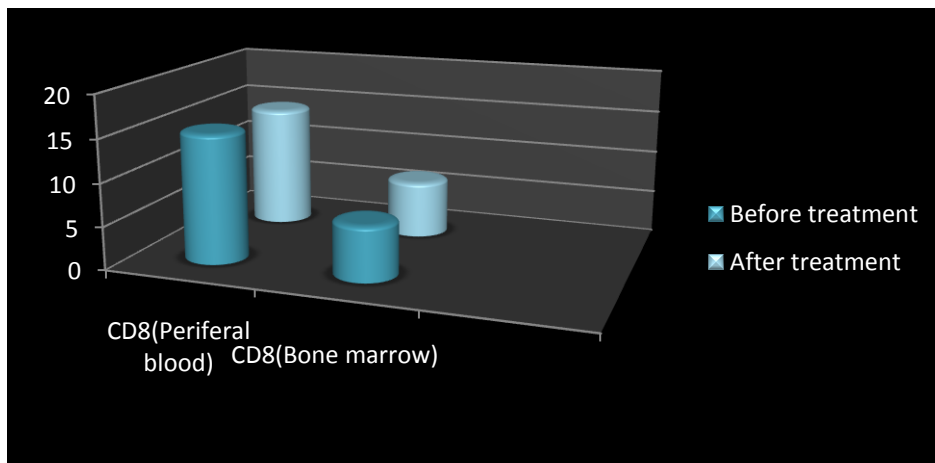
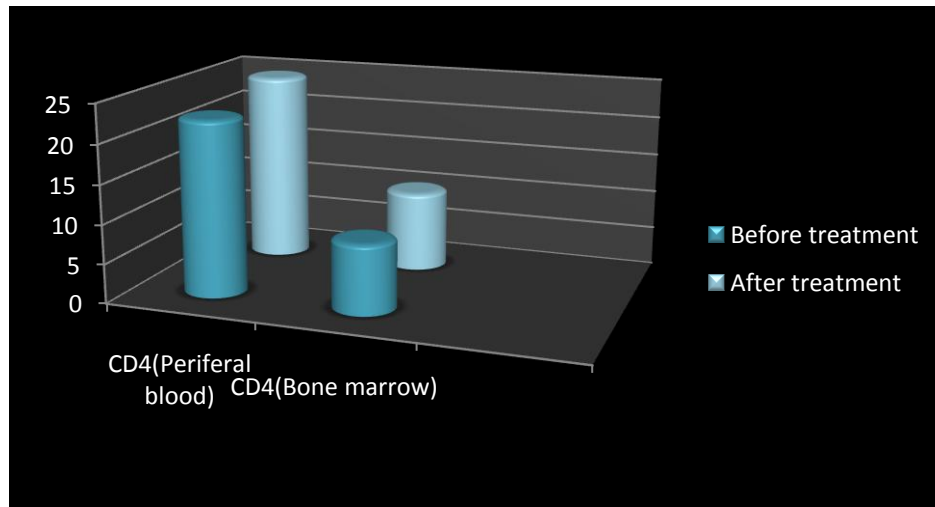
The stimulation of bone marrow with epinephrine infusion occurred in the breast bone permanently during the first 48-168 hours of critical condition with device "BECTON-DICKINSON SE 400".

The special methods of research are presented as studding a number of bone marrow and peripheral blood stem and immune competent cells. In time of research of stem and immune cells in the heparinized bone marrow and peripheral blood we were studying CD3, CD4, CD8, CD34, CD72 cells. Was used Phagotest (USA) - the kit of producing mononuclear antibodies. The cells were examined by luminescent microscope "LUMAN C4" (Denmark). The separation of lymphocytes was in gradient of ficol-verographine, density of which was 1.079g/cm³, the concentration of cells in lymphocytes cultures was 10⁶cell/ml, and suspension purity was 92-95%.

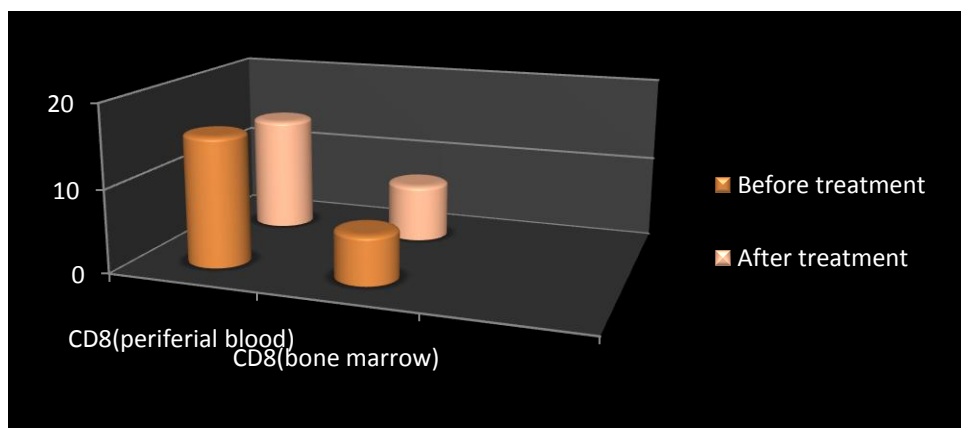
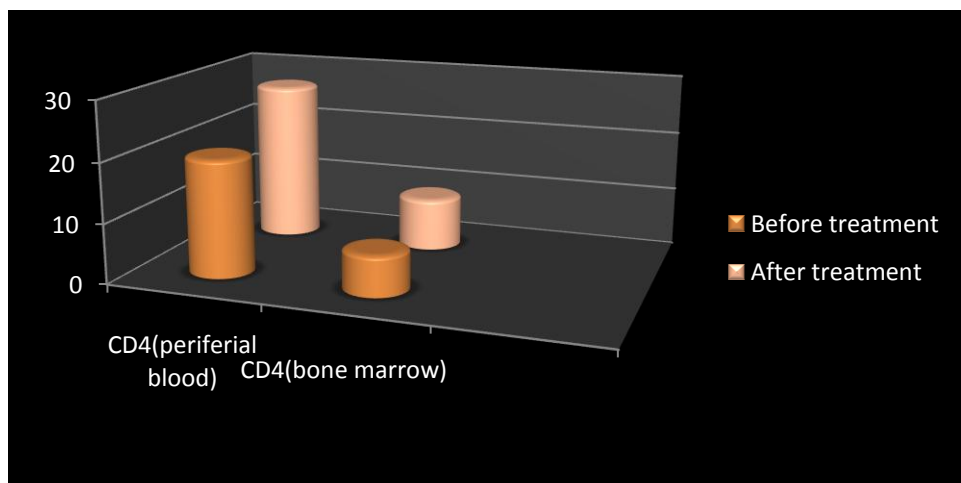
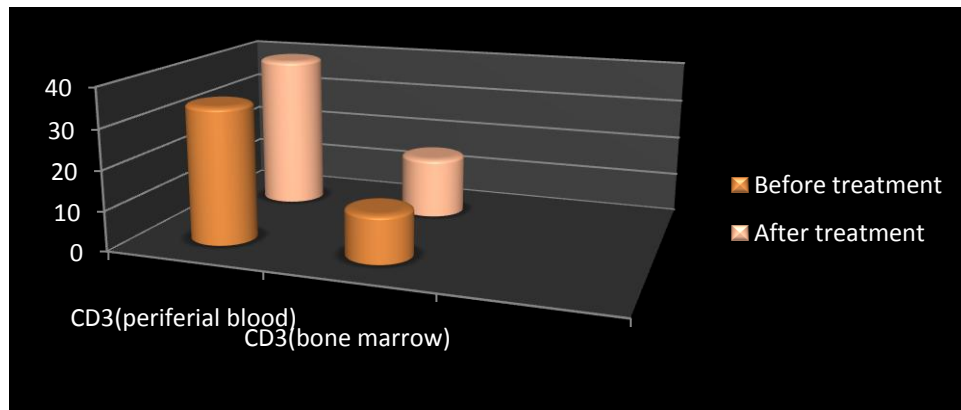
In table #3-4 are given the data of changes of examined cells (CD3, CD4, CD8, CD34, CD72) after treatment by electrical impulses and epinephrine in bone marrow and peripheral blood.

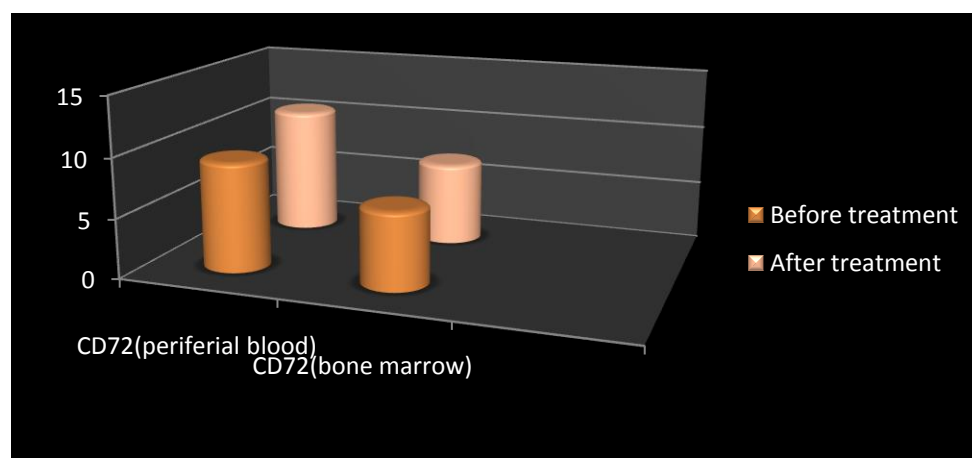
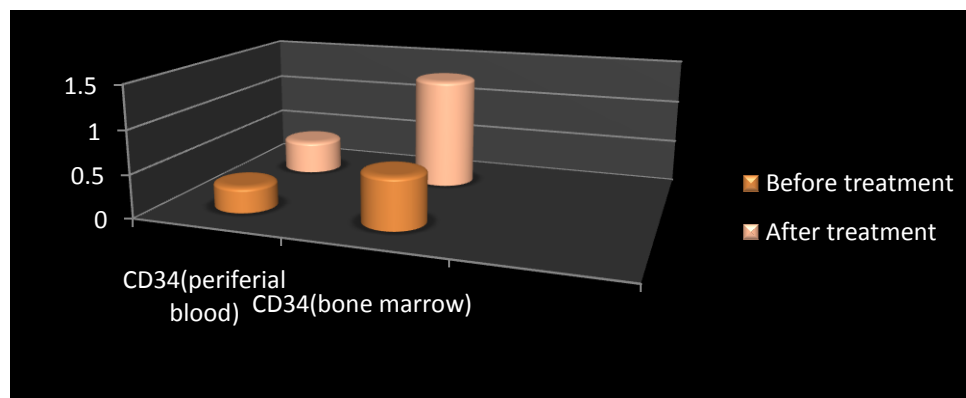
CD3, CD4, CD8, CD34, CD72 cells changes by treatment with electrical impulses.(Table #3)





CD3, CD4, CD8, CD34, CD72 cells changes by treatment with epinephrine. (Table #3)





So, according to the results, in perypheral blood the number of CD3 has increased by 10%, CD4- by 10%, CD34-by 20%, CD72-by 11%, and in bone marrow the number of all cells are increased: the number of CD3 has increased by 11%, CD4- by 12%, CD8- by 10%, CD34-by 900% and CD72- by 11%.

and by epinephrine CD3 has increased by 11%, CD4- by 14%, CD34-by 13%, CD72-by 11%, and in bone marrow the number of all cells are increased: the number of CD3 has increased by 13%, CD4- by 13%, CD8- by 12%, CD34-by 27% and CD72- by 11%.

Mortality in treated patients with electrival impulses and epinephrine in comparison with the control group reduced by 9.6%. The degree of disability was the following: asossiated life in comparison with the control group was increased by 3.1% of patients, and the possibility of independent life was increased by 3.3%.

The total duration of treatment in the main group was reduced by 23.3%. The value of treatment in based group was reduced by 23.1%

All these referes to the obvious advantage of treatment, with electrical impulses and epinephrine, in treatment process of patients incritical condition.

იმუნური პასუხის ცვლილებანი კრიტიკულ ავადმყოფებში ძვლის ტვინის ელექტრული იმპულსებით და ეპინეფრინით დამუშავების დროს ზვ.ხელაძე, ზ.ხელაძე, ნ.გოგებაშვილი, ნ.ბარნაბიშვილი, მ.ტყემალაძე, თ.მაზმიშვილი საქართველოს კრიტიკული მედიცინის ინსტიტუტი. თბილისი, საქართველო.

უკანასკნელ წლებში (ზვ.ხელაძე 2009წ.) კრიტიკულ მდგომარეობათა ლიკვიდაციისათვის დიდი მნიშვნელობა ენიჭება პათოლოგიური პროცესების ზემოქმედებით დაზიანებული უჯრედებისა და ქსოვილების რეპარაციის პროცესის მართვას. საქართველოს კრიტიკული მედიცინის ინსტიტუტის მიერ უკვე შემუშავებული და დაპატენტებული იქნა ელექტრონული იმპულსების, პლაზმური სხივების, ნიტოგლიცერინის და ეპინეფრინის მეშვეობით მკურნალობის მეთოდები და აღნიშნული პროცესების მართვის ალგორითმი. (ზვ.ხელაძე-2007წ, ზვ.ხელაძე 2009წ და სხვა). წარმოდგენილია ელექტრული იმპულსებით და ეპინეფრინით მკურნალობის კვლევის შედეგები.

გასაღები სიტყვები: იმუნოკომპეტენტური უჯრედები, ელექტრული იმპულსები, ძვლის ტვინი.