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**Bone marrow electro stimulation shall become a standard treatment for critical patients
(Tbilisi, Georgia)**

Is analyzed the results of bone marrow electrostimulation use in Critical Care Medicine Institute, namely is significantly reduced the liquidation period of critical condition, patients death mortality rate and cost of treatment, also is observed complication reduce while treating. The results indicates on the necessity of bone marrow processing by electrical impulses in the standard care of Critical Care Medicine

Key Words: Bone marrow, electro stimulation, standard treatment , patients, critical conditions,

Actuality: In critical condition, takes place separate cells destruction and necrosis of various organs and tissues. For the proper functioning of these organs and tissues is essential to curb the damaged cells and to replace them with new cells. For the acceleration and perfection of the mentioned process, committing processes of progenitor cells in bone marrow is very important (Z. Kheladze, 2007). In Critical Care Medicine of Georgia there are presented various methods for stimulation differentiation process of Stem Cells: Plasma irradiation processing, Infusion of adrenaline and nitroglycerine in bone marrow and others (Patient #), was found that among them the most effective is bone marrow electrical impulses processing. Consequent of this, the objectives of the work is to study the efficiency of bone marrow electro stimulation in critical care medicine and its introduction in practice.

Materials and Methods: Had been exercised around 1304 critical patients, among them 568 women and 735 men, bed-days amount was 7281 b/d, the average holding time on the bed of patients was 5.5 bed-days, patients were from 22 to 91 years old. Critical condition was associated with acute disorder of brain blood circulation, acute respiratory failure, hypovolemic shock, polytrauma, endotoxic shock, septic shock, encephalitis-myelitis, asthmatic status, anaphylactic shock and heavy myasthenia. There are revealed concomitant diseases such as: Arterial hypertension, chronic heart failure, atrial arrhythmias, diabetes and other. Coma ranged by Glasgow scale from 3 to 12 score, was carried out standard treatment, such as Anti-bacterial, detoxification and Dehydration Therapy, also correction of electrolyte and acid-base balance and other measures, artificial lung ventilation, vasopressin and inotropic therapy, sedation and analgesia and other symptomatic treatment. On this background, in some cases in addition are carried out bone marrow electrostimulation, constantly for the first 6 days after hospitalization.

Had been carried out monitoring and artificial lung ventilation of all patients, their coma quality in accordance with the Glasgow Coma Scale ranged between 3-12 score, the treatment efficiency of bone marrow electrostimulation was checked based on the lethality, complications, bed days and treatment value. Also was studied biochemical, morphological and ice-base balance, and number of immunocompetent cells in the brain marrow.

The cost of standard treatment is 800 GEL plus the cost of bone marrow electrostimulation 50 GEL for per day.

Results and Discussion: Patients re divided into two groups:

The first control group 902 patients, to whom were carried out only standard treatment. Among them were 392 women and 510 men; Average age 65-73 years; Bed-days amount 5281, the average holding time on the bed of patients was 5.5 b/d. The reasons for critical condition in accordance with the frequency were: Brain – 242 patients, Acute respiratory failure – 217, Hypovolemic shock – 73, Polytrauma - 30, Endotoxic shock - 30, Septic shock - 10, Cardiological shock – 19, Asthmatic status - 3, anaphylactic shock – 6, and heavy myasthenia – 2 and others. The Lethality in the first group was 29.5%

There are interesting results relating Lethality indicator in different pathologies. During blood circulation failure in brain the lethality was 39.2%, during Acute respiratory failure it was 35.4%, and during Hypovolemic shock it was 28.2%. The cost of one bed-day is 800 GEL and the cost of patient treatment is 4224 800 GEL. For 1 patient's cured was spent approximately 4228 GEL.

The second main group is consisted with 402 patients, on the background of treatment had been carried out Stem Cells electrostimulation. Among them were 177 women and 225 men; Average age 65-73 years; Bed-days amount 2000b/d, the average holding time on the bed of patients was 4.9 b/d. The reasons for critical condition in accordance with the frequency were: Acute respiratory failure – 195, Acute failure of blood circulation in brain - 63 Hypovolemic shock – 14, and so on others critical conditions. Lethality was 21.6%. Lethality indicator in different pathologies is the following: acute respiratory failure – 23.2%, blood circulation failure in brain – 21.4%, Hypovolemic shock – 0.7%

The cost of one bed-day is 850 GEL and the cost of patient treatment is 1 600 000 GEL if the patient will be hold in hospital for 4.9 b/d; for 1 patient's cured was spent approximately 4165 GEL.

The method itself is easy to perform for med-personnel, patient doesn't feel any discomfort and is not caused complication, also there had not been revealed any complication related to manipulation while carrying out stimulation process.

Thus there was revealed that in the main group compared with the control group was decreased total lethality by 7.9%, although the lethality was decreased during other pathologies, for example: in blood circulation in brain it was decreased by 20.6%, during acute respiratory failure – 13.8%, during hypovolemic shock – 27.5%, also was decreased the holding time on the bed by 0.9% and the cost for one patient treatment was reduced by 308.7 GEL.

Pathology	Number of Patients	Lethality
Stroke	241	42%
Acute Respiratory failure	217	37.1%
Hypovolemic Shock	73	28.2%
Acute Renal failure	14	35.7%
Acute Hepatic failure	12	50%
Septic shock	10	70%
Diabetic coma	12	25%
Acute Heart failure	19	36.8%
Trauma	30	23.3%
Critical Condition caused by oncologic diseases	27	18.5%

Diagram 1. Number of patients and Lethality in accordance with the illness in the First Group

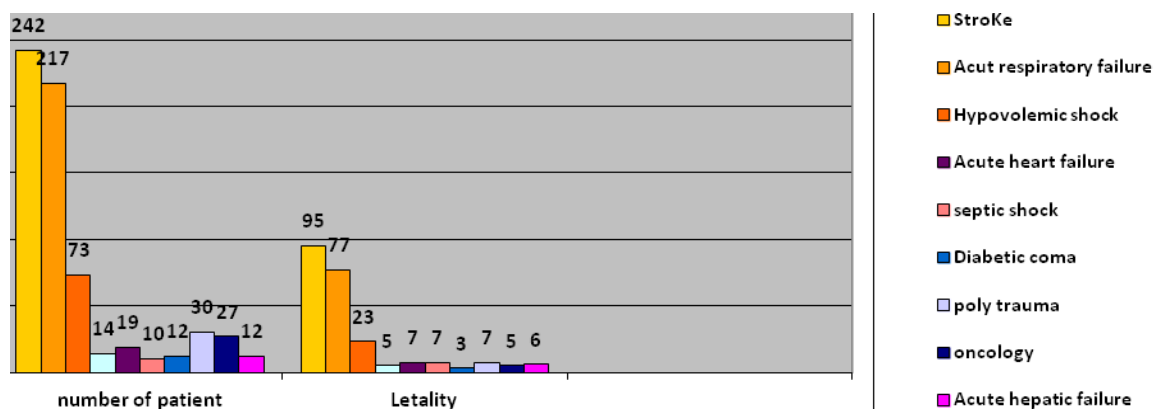


Table №2 Number of patients and Lethality in accordance with the illness in the Second Group

Pathology	Number of Patients	Lethality
Acute Disorder of Blood Circulation in Brain	67	21.4%
Acute Respiratory failure	195	23.3%
Hypovolemic Shock	14	0.7%
Acute Renal failure	11	36.3%
Acute Hepatic failure	4	50%
Septic shock	10	60%
Diabetic coma	8	12.5%
Acute Heart failure	22	13.6%
Trauma	1	0%
Critical Condition caused by oncologic diseases	18	50%

Diagram 2. Number of patients and Lethality in accordance with the illness in the Second Group

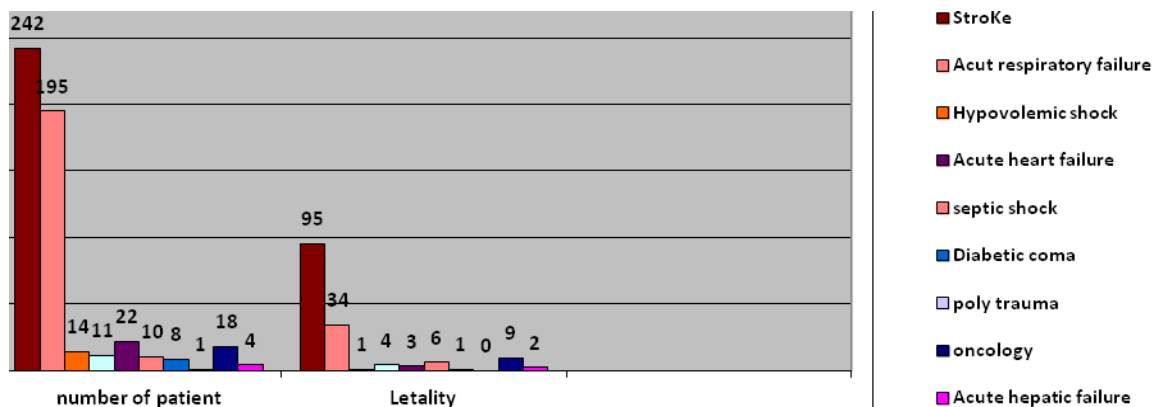


Table #3 Total Lethality of Patients in the First and Second Groups

	First Group	Second Group
Lethality	29.5%	21.6%

Diagram 3. Total Lethality of Patients in the First and Second Groups

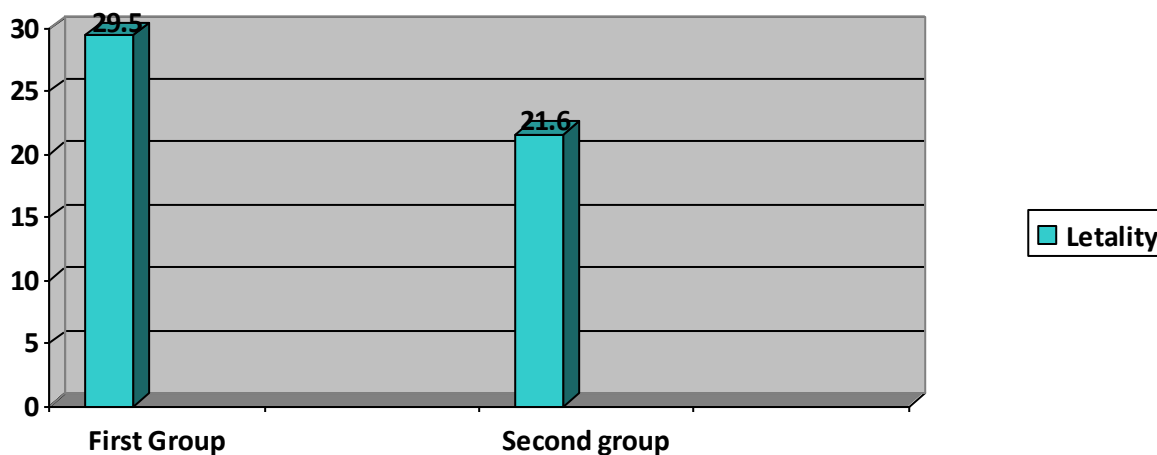
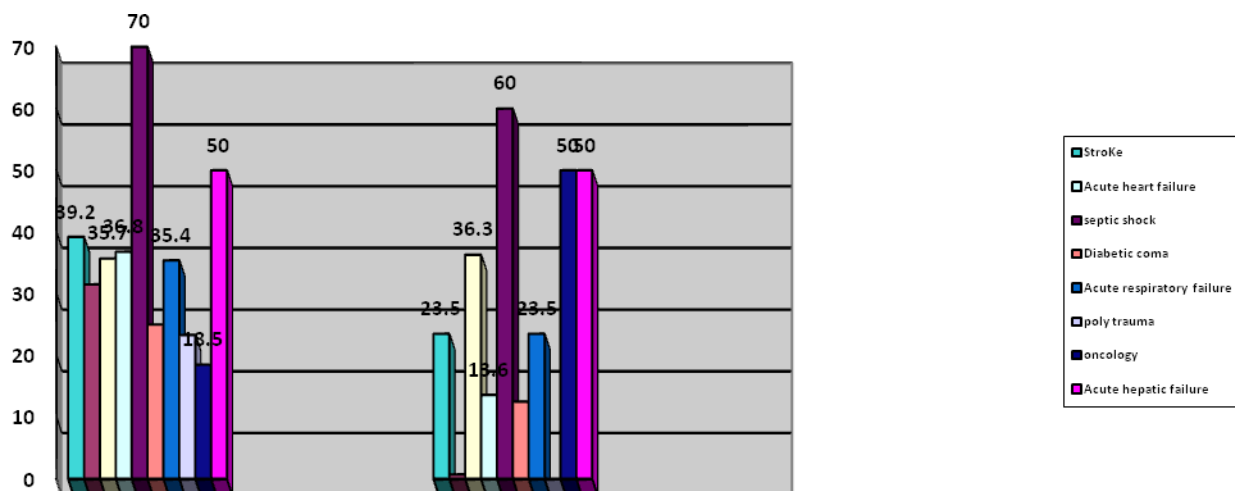
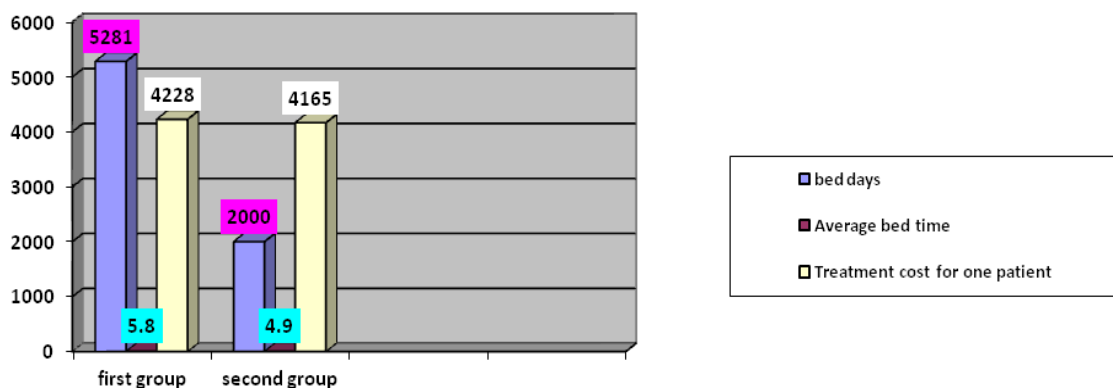


Diagram 4. Lethality of Patients in accordance with the illness of the First and Second Groups



Indicator	I Control Group	II Major Group
Bed-days	5281	200
Average Bed Time	5,8	4,9
Treatment cost for one patient	4228	4165



Conclusion:

Including Stem Cells electrostimulation in the treatment reduces lethality by 7.9%, the treatment length is decreased by 0.9% and the bed-day cost is 63.00 GEL cheaper

References:

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ძვლის ტვინის ელექტრო სტიმულაცია კრიტიკულ ავადმყოფთა სტანდარტული მკურნალობა უნდაგახდეს (თბილისი, საქართველო)

გაანალიზებულია საქართველოს კრიტიკული მედიცინის ინსტიტუტში ძვლისტვინის ელექტროსტიმულაციის გამოყენების შედეგები.გამოკვლეულია 1304 კრიტიკულ მდგომარეობაში მყოფი პაციენტი,აქედან ქალი იყო 568, კაცი კი 735, პაციენტების ასაკი მერყეობდა 22-დან 91 წლამდე. მათ კლინიკაში დაჰყვეს 7281საწოლ-დღე.ყველა პაციენტი იმყოფებოდა კომის მდგომარეობაში. ავადმყოფებს უტარდებოდათ სტანდარტული მკურნალობა,რომელიც მოიცავდა ფილტვების ხელოვნურ ვენტილაციას, ანტიბაქტერიულ, დეტოქსიკაციურ და დეჰიდრატაციულ ღონისძიებებს,წყლისა და ელექტროლიტების ბალანსის კორექციასვ და ინტენსიური თერაპიის სხვა ღონისძიებებს. ამ ფონზე ძირითადი ჯგუფის ავადმყოფებს უტარდებოდა ძვლის ტვინის ელექტროსტიმულაცია კლინიკაში შემოსვლიდან პირველი 6 დღის განმავლობაში მუდმივად.დადგინდა, რომ ძვლის ტვინის ელექტროსტიმულაციის მეშვეობით საგრძნობლად მცირდება კრიტიკული მდგომარეობის ლიკვიდაციის დრო, ავადმყოფთა სიკვდილიანობის მაჩვენებელი და მკურნალობის ღირებულება.ამასთან შემცირდა კრიტიკულ მდგომარეობათა დროს აღმოცენებული გართულებების სიხშირე. მიღებული შედეგები მიუთითებენ კრიტიკულ მდგომარეობაში მყოფი პაციენტების მკურნალობაში ძვლის ტვინის ელექტროსტიმულაციის მეთოდის შემოღების მიზანშეწონილობას.