

Toxoplasmosis therapy of patients with ALS improves results of combined use of Cyclosporine A and air at surplus pressure in chamber

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Introduction. In our clinic we have developed a new protocol of using surplus pressure in a pressure chamber for the treatment of consequences of cerebral stroke and neurodegenerative diseases. Contrary to hyperbaric oxygenation (HBO), the method was called normoxic curative compression because it did not lead to blood plasma hyperoxygenation. Normoxic compression in a pressure chamber is accompanied by activation of tissue respiration, sustained recovery of microcirculation, and normalization of free radical processes. Combination of normoxic compression with a reversible immunosuppressant cyclosporine A significantly increases the curative effect of the method in neurodegenerations, including ALS, and causes a decrease in apoptosis. ALS patients with immunodeficiency often have high titers of antibodies to neuroinfectious agents, in particular toxoplasmosis.

We have studied an effect of the treatment of toxoplasmosis on the results of combined use of cyclosporine A and normoxic compression.

Characteristics of the main groups of ALS patients

Diagnosis	n	Age (Years)	Duration Of disease (Months)	With severe Bulbar symptoms
ALS without Toxoplasmosis	43	54,04±3,5	18±2	20
ALS with Toxoplasmosis	32	53,7±2,9	17±3	20

Materials and methods. 78 patients with ALS were observed, thirty five patients exhibiting high IgG titers to toxoplasmosis. All patients received Cyclosporine A (2-3 mg/kg) and compression with air at 1.1 ATA in chamber (12 and more session up to 20 minutes). Thirty two patients with toxoplasmosis were administered Fansidar (3 group). The second group consisted of patients suffered from toxoplasmosis who were not administered Fansidar.

The first group comprised 43 ALS patients without toxoplasmosis. The table shows the characteristics of the main groups of ALS patients categorized in accordance with their age, duration and severity of the disease. Complex investigations included: the score estimations of ALS, the immunological status, a monitoring of external respiration, and acid-base state.



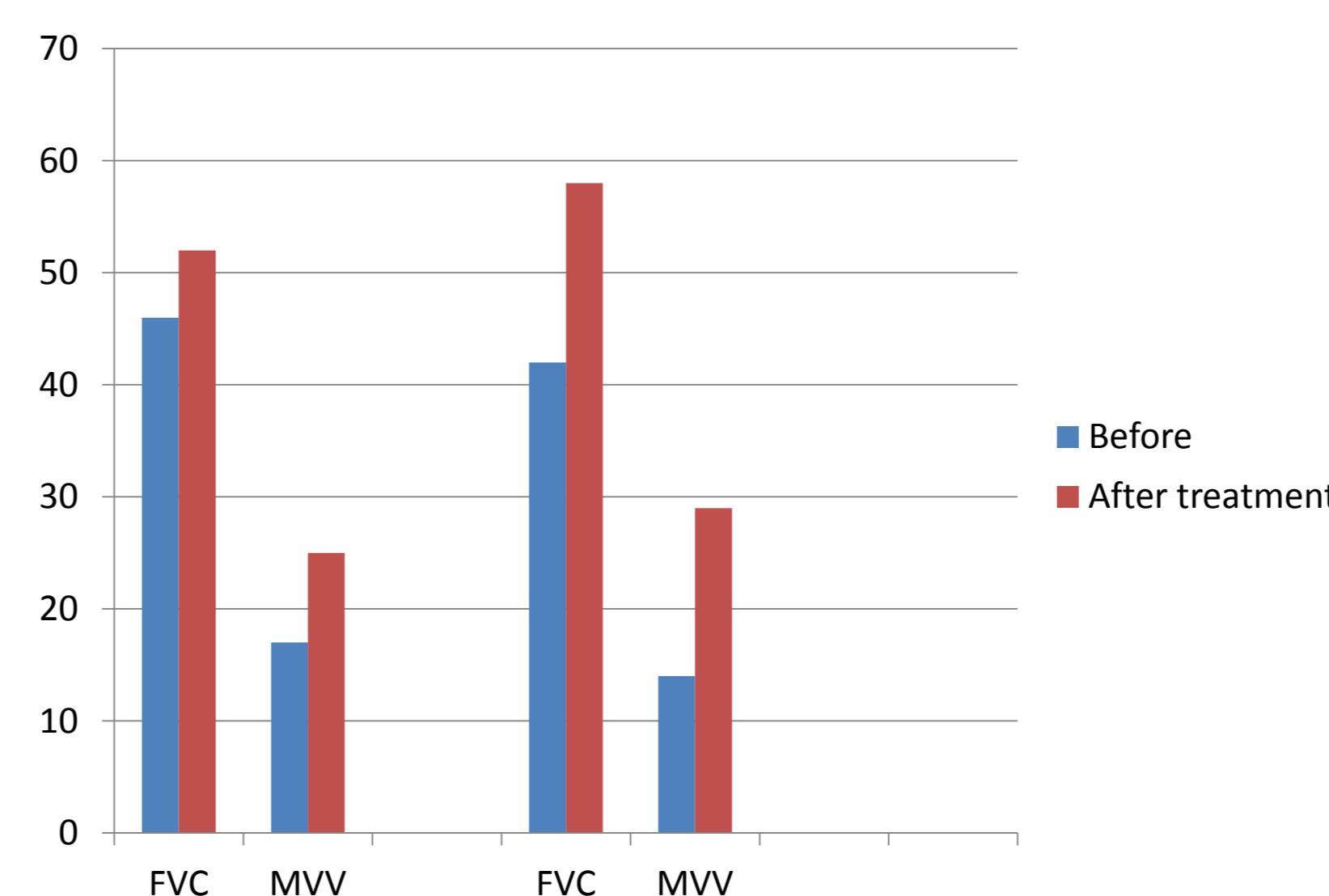
Photo of February 27, 2013. 52-year-old female patient (Ch.) after an NLC session (the third treatment course). Diagnosis: mixed form of ALS with swallowing and phonation disorders and pronounced decrease in respiratory volumes (severe reduction of FVC and MVV). The patient with 4 stage of ALS is observed for 8 months from 18 June, 2012; the diagnosis was made a year before the treatment.

Results. In the treatment of bulbar ALS with marked phonation and swallowing disorders, the use of normoxic curative compression in a pressure chamber in combination with cyclosporine A was accompanied by restoration of phonation and swallowing functions to various degrees and by increasing respiratory volumes, which allows one to delay the beginning of nutritional support and tracheostomy for a time. Fig.1 shows the dynamics of respiratory volumes in 2 groups of ALS patients who were administered and not administered Fansidar. The increase in respiratory volumes was more apparent in the group of patients received Fansidar (third group). In Fig.2 shows dynamics of the immune status parameters in patients without toxoplasmosis (n=25), in patients with toxoplasmosis who did not receive Fansidar (n=3), and patients with toxoplasmosis who received Fansidar (n=20). After the treatment with cyclosporine A in combination with normoxic compression, the patients of the first and the third groups demonstrated a significant decrease in CD95 and a tendency to general normalization of the immune status. The second group of patients (n=3) with high toxoplasmosis-specific IgG titers who did not receive Fansidar demonstrated inverse dynamics in the form of a significant increase in CD95.

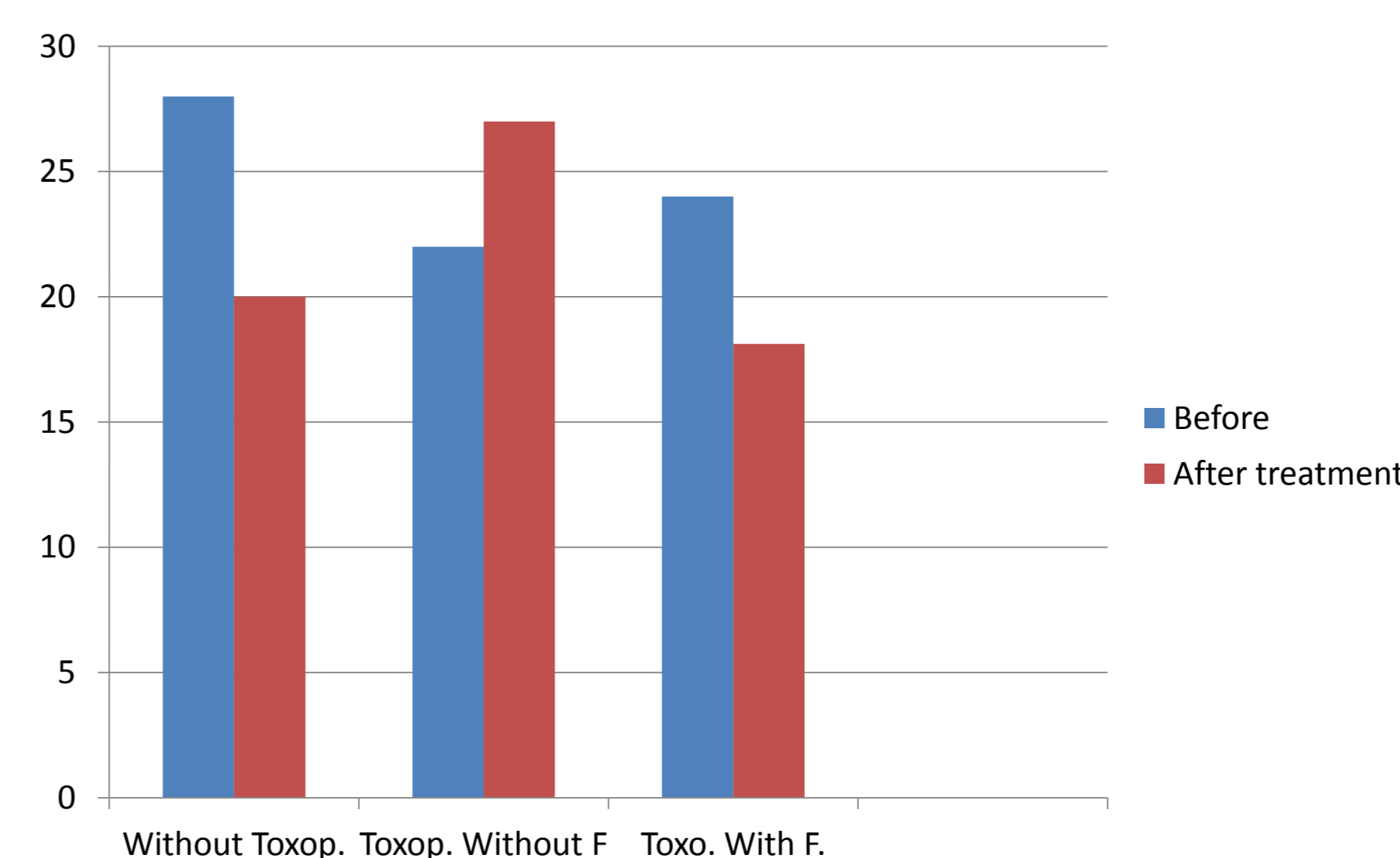
In Fig.3 shows lifetime of process after the treatment (more than 3 years) was observed in 5 patients with doubtful initial diagnosis of ALS.

The use of cyclosporine A in combination with normoxic compression was accompanied by marked improvement in bulbar symptoms, disappearance of fibrillations and even an increase in strength and muscle mass along with a significant decrease in CD95. After the treatment, 3 patients with *high titers* of *toxoplasmosis*-specific antibodies who did not receive Fansidar had a significant increase in CD95 with a minimal curative effect. Then, all patients with toxoplasmosis received a long-term treatment with Fansidar according to the recommended schemes. The analysis of the clinic effect and the aftereffect duration showed that the group of patients with *toxoplasmosis who received* Fansidar demonstrated more pronounced increase in respiratory volumes and longer lasting curative effect.

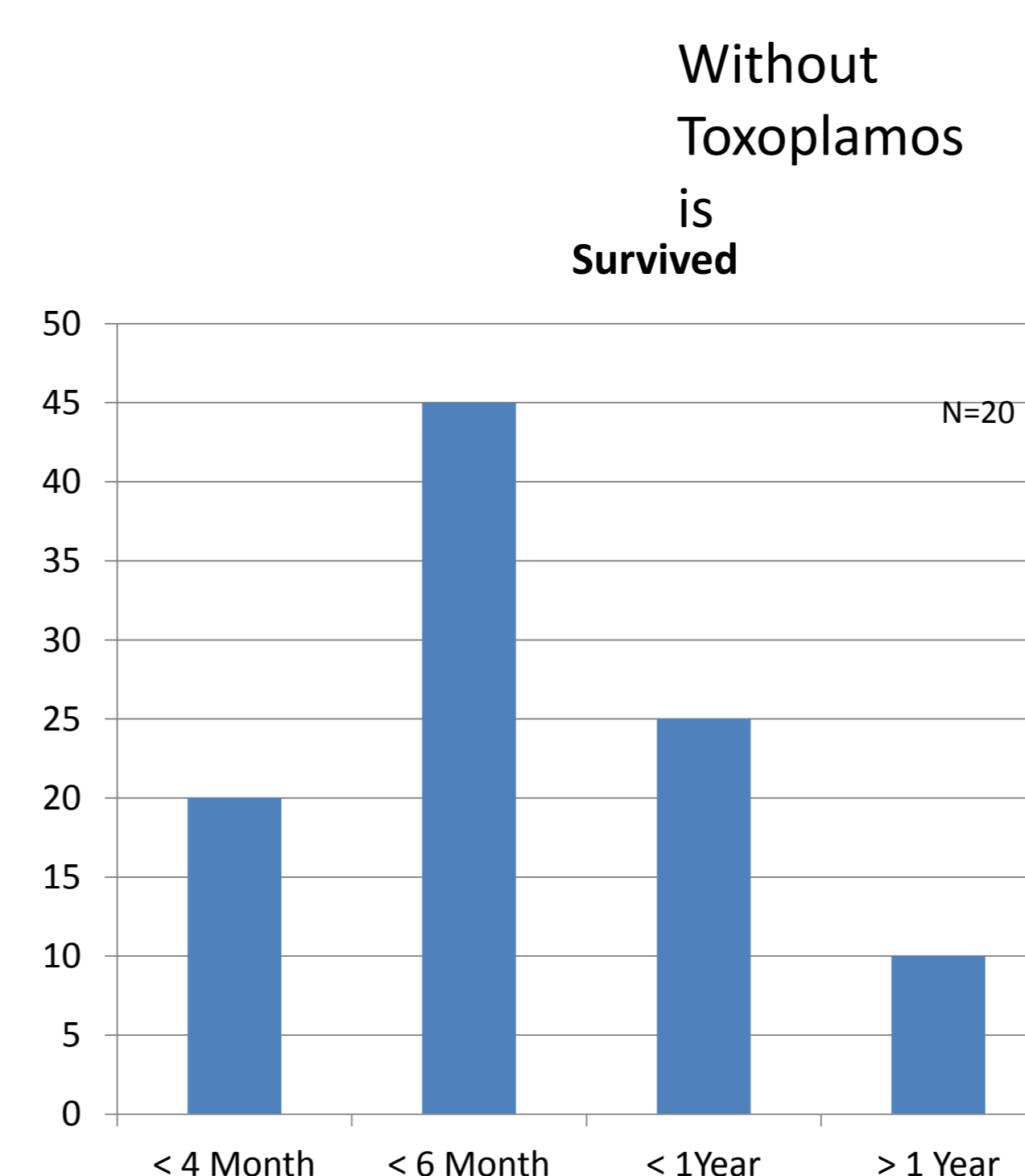
Dinamic of CD95 in ALS patients after NLC with Cyclosporine A with or without Fansidar (F)



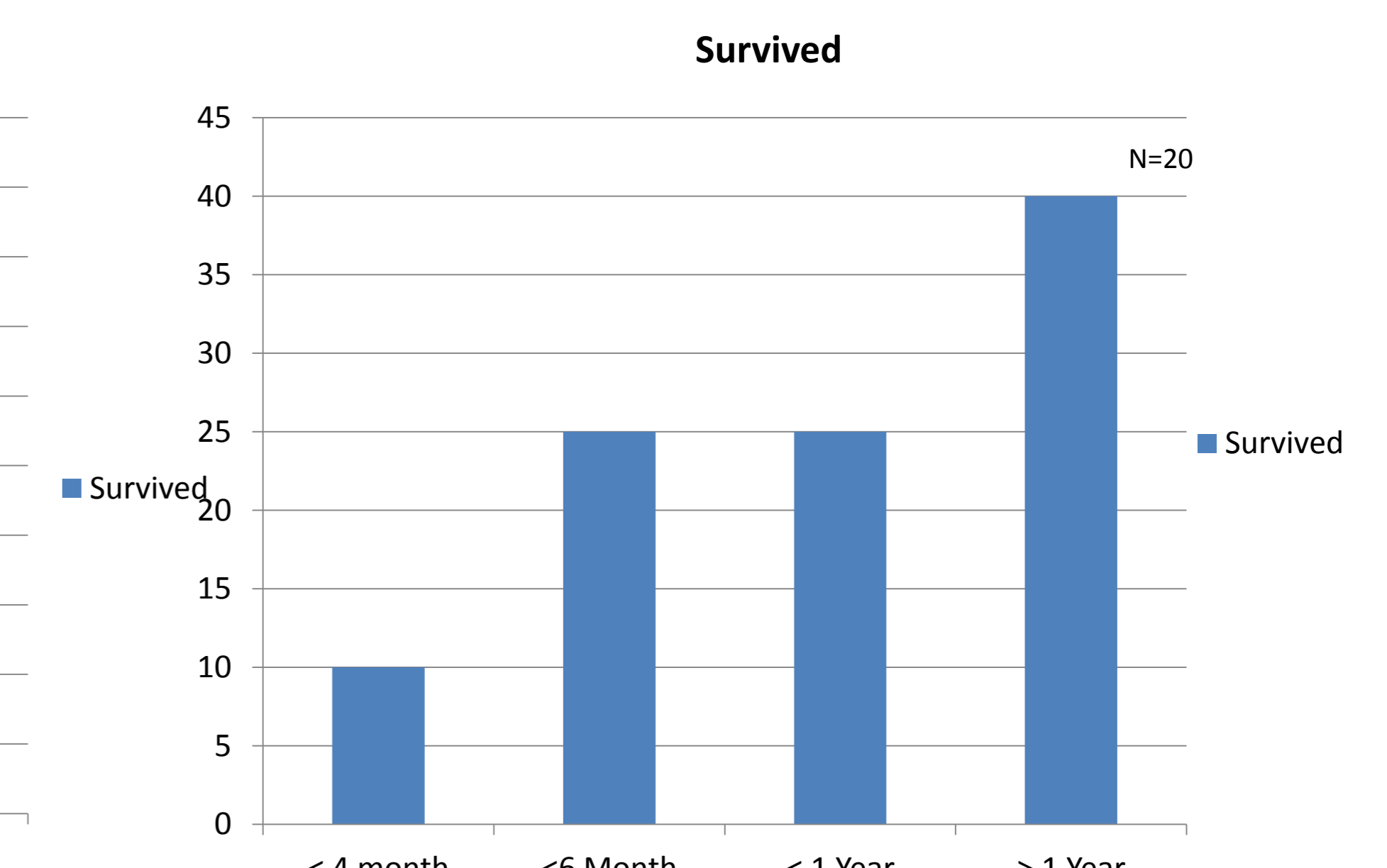
Dinamic of CD95 in ALS patients after NLC with Cyclosporine A with or without Fansidar (F)



Lifetime of patients with severe ALS after NLC and Cyclosporine A



With a high titres to toxoplasmosis with Fansidar



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Conclusion.

- The treatment of ALS patients with persistent neuroinfection can improve the efficiency of the therapy directed to slowing down the progression of ALS.
- The method of normoxic curative compression in combination with cyclosporine A is completely safe and does not have side effects even in severe ALS patients. Significant decrease in apoptosis and stabilization of ALS patient's condition are observed during the course of specific anti-inflammatory and antiviral therapy.
- The curative effect of the method is more apparent in the early stages of the disease.