CLINICAL EFFICACY OF THE MODIFIED TREATMENT SCHEME IN PATIENTS WITH NEWLY DIAGNOSED PULMONARY TUBERCULOSIS

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The most significant achievements of phthisiology are associated with the development of antibacterial therapy. Current practice of controlled treatment is the programmed treatment that does not always lead to the desired results.

The main reasons of treatment failures within the first 2-3 months (intensive treatment stage) include: failure to comply with treatment regimens, concomitant diseases, preventing the use of appropriate chemotherapy, drug resistance, the inability to reach the optimal concentrations of drugs in blood and tissues due to their poor absorption in the gastrointestinal tract or rapid inactivation of drugs.

The clinical and experimental studies have shown that the therapeutic effect of drugs directly correlates with the concentration of drugs in the blood and, correspondingly, in the focus of specific inflammation. It has been also shown that inclusion of even one of the antimycobacterial agents by parenteral administration can improve the efficacy of treatment in terms of the frequency and time of the disappearance of clinical symptoms and cessation of bacterioexcretion, and shorten the period of hospital stay.

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Objective of the work: To assess the efficacy of the modified treatment regimen with isoniazid, rifamycin (Rifonat®, 30mg/ml concentrate for infusion solution, produced by Yuria-Pharm Ltd., Ukraine) and ethambutol (Inbutol®, 10% injection solution, produced by Yuria-Pharm Ltd., Ukraine) by intravenous infusion.

Materials and methods: The study involved 50 patients who were divided into the main group (MG) and control group (CG) (25 patients in each group). All patients had newly diagnosed pulmonary tuberculosis.

The difference between the main and control groups was the use of isoniazid, rifamycin (Rifonat®) and ethambutol (Inbutol®) by intravenous infusion as a part of the standard treatment in the main group, together with the intramuscular administration of streptomycin and oral administration of pyrazinamide. All these drugs were used in the permissible doses according to the pharmacopoeia requirements. Antibacterial therapy was assigned according to the category of follow-up care with subsequent correction after evaluation of Mycobacterium tuberculosis sensitivity. The characteristics of age, clinical, radiological, and laboratory parameters were identical between the study groups of patients.

Study results: In the main group of patients, infiltrative tuberculosis was diagnosed in 14 patients (56.0%), disseminated tuberculosis - in 9 patients (36.0%), and other forms - in 2 patients (8.0%). Bacterioexcretion was observed in 19 patients (76.0%), cavitations - in 21 patients (84.0%). The control group (CG) was identical in terms of forms and character of the process.

The patients in the main group were characterized by more rapid trend toward normalization of auscultatory signs of inflammation, catarrhal signs were observed after 2 months in 1 patient (4.0%) in the main group, and 3 patients (12%) in the control group (p> 0.05). Analysis of the data concerning the periods of bacterioexcretion cessation showed that the bacterioexcretion ceased in 18 patients (94.7 ± 5.1)% in the main group, and 15 patients (79.0 ± 9.4)% in the control group by the end of the intensive chemotherapy stage (p> 0.05). The average time to cessation of bacterioexcretion in the main and control groups were (1.9 ± 0.3) and (2.4 ± 0.2) months, respectively. It should also be noted that bacterioexcretion in the main group persisted only in 1 patient (5.26%), which was associated with the severity of the process (caseous pneumonia was diagnosed with concomitant resistance to all first-line drugs). In total, 6 patients (31.6 %) in the main group had diagnosed multi-drug resistance by the 2nd month, however, bacterioexcretion was ceased in 5 patients (26.3%) by the time of obtaining the results of the drug susceptibility test. In the control group, the multi-drug resistance was verified in 7 patients (36.8 %) and bacterioexcretion was
ceased in 3 patients (15.8%). Rapid normalization of the body temperature and a sharp decrease in signs of intoxication (on week 1 from the starting of the modified treatment regimen) was typical for all the chemoresistant patients in the main group. In the control group, normalization of the body temperature was observed in 3 patients by the week 3-4 of treatment.

By the end of the 2nd month of treatment, radiological positive dynamics (improvement) was observed in all 25 patients (100%) in the main group and in 18 patients (72.0%) in the control group (the signs of positive dynamics included: total or partial resolution of focal infiltrative changes, tuberculous cavity closures or reduction of their sizes.

The average healing time of the cavitations in the main group was (3.0 ± 0.2) months; and it was (3.9 ± 0.3) months in the control group (p <0.05).

The data of the radiological dynamics in patients with concomitant diabetes mellitus in the main and control groups are of certain interest. 5 patients (20.0%) in the main group and 4 patients (16.0%) in the control group with this condition were treated; and all the patients remained sensitive to the first-line drugs. The drugs of infusion group were administered to the patients in the main group with aqueous solution of 0.9% sodium chloride. By the second month of treatment, healing of tuberculous cavities and marked resolution of focal infiltrative changes were observed in all the patients in the main group. In the control group, the scarring was observed in 2 patients, and the formation of pseudo-tuberculoma was observed in 1 patient by the abovementioned time; in general, radiological dynamics was characterized as positive, but less pronounced than that in patients in the main group.

The studies are ongoing, taking into account the small sample size.

Conclusions:
Summarizing the results of the clinical study, it has been found that the use of the modified treatment regimen using intravenous infusions of isoniazid, rifampycin (Rifonat®, 30 mg/ml concentrate for infusion solution, Yuria-Pharm Ltd., Ukraine) and ethambutol (Inbutol®, 10% injection solution, produced by Yuria-Pharm Ltd., Ukraine) as a part of etiotropic treatment has an advantage over the use of standard chemotherapy due to reducing the time to bacterioexcretion cessation and healing of tuberculous cavities, which makes it possible to recommend this method for the treatment of patients with newly diagnosed pulmonary tuberculosis.