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State Committee of the USSR on Science and Technology

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REPORT
on Research Results of Computer-Aided Diagnostic Complex
Dynamics-100

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SUMMARY

The report summarizes the results of scientific and research work on assessment of efficiency of software-hardware diagnostic complex Dynamics-100.

Grounds for execution of the work:

1. The letter of the Director of Dynamika Center, Lenin prize laureate, academician E. Ya. Buzov with the resolution of the Minister of atomic energy of the Russian Federation V. N. Mikhailov as of August 26, 1996.
2. The protocol of joint conference of the leading specialists of clinical hospital # 83 and innovation and research medical and biological center Dynamika as of October 02, 1996.
3. Protocol #12 of the Commission of the Ministry of Health of the Russian Federation as of October 03, 1996 on the procedure of conduction of clinical trials of computer-aided system Dynamics-100.
4. Scientific and technical cooperation contract between Clinical Hospital #83 and Center Dynamika as of December 20, 1996.

The work objective is investigation of possibilities and assessment of efficiency of Dynamics-100 system for solution of the following tasks:

- 1 express assessment of a patient`s general condition;
- 2 control of dynamics of patients` state during out-patient and in-patient treatment;
- 3 optimization of the administered methods of treatment;
- 4 determination of the risk group of oncological diseases.

This report contains materials summarizing the results of investigations on assessment of efficiency of computer-aided diagnostic system Dynamics-100. The work was conducted in the period from March 20, 1997 till December 02, 1997 in the departments of immunology and cardiology in Clinical Hospital #83, as well as during prophylactic medical examination of workers of the atomic industry in Surgut. 780 tests were conducted in 459 patients.

Section 4. Preliminary Results of Clinical trials of Computer-Aided Diagnostic Complex Dynamics-100 4.1. Immunology Department

Examined patients: patients of the department, consultative patients, staff.

Age category: 14-60 years old.

The total of 240 tests in 123 patients, of them:

Once – 60 persons;

Twice (at the beginning and at the end of treatment) – 29 persons;

More than twice – 34 persons.

Distribution of patient according to the main nosological forms:

Clinical diagnosis	Number of persons
Apparently healthy	28
Various somatic diseases	81
Hysteromyoma	5
Extraperitoneal lymphadenopathy	1
Gastric polyps and peptic ulcer disease	2
Left kidney cancer	1
Maxillary sinus cyst	1
Prostatic hypertrophy	1

Note: in three patients examination by Dynamics-100 system did not bring any results due to tachycardia, left ventricular aneurysm, transient hyperkinesia of the upper extremities.

Results: From the group of examined persons, presented in the Table, 81 patients with various somatic pathologies (according to the data of diagnostic complex Dynamics-100) have got into the risk group. During clinical examination no oncological data were detected. However, the obtained results in these patients require case follow-up and repeated advanced clinical examination. Of 11 persons presented in the Table, 10 had oncological pathologies, that completely corresponded with the diagnosis by Dynamics-100 system.

Cardiology Department

Examined patients:

Staff – 22 persons;

Patients of the hospital – 118 persons

Workers of the atomic industry in Surgut – 196 persons.

Age category: 14-60 years old.

The total of 540 tests in 336 patients, of them:

Once – 248 persons;

Twice (at the beginning and at the end of treatment) – 56 persons;

More than twice – 32 persons.

Distribution of patient by the main nosological forms:

Clinical diagnosis	Number of persons
Apparently healthy	162
Coronary heart disease, various forms	121
Hypertensive disease and a concurrent coronary heart disease	33
Hypertensive disease	15
Oncopathology	5

Results:

In 162 apparently health persons no deviations from the norm in terms of Dynamics-100 were detected.

In the group of patients (174 persons) the results of investigations in terms of Dynamics-100 got distributed in the following way:

- a) not ranged in the oncology risk group – 152 persons (by clinical findings no oncopathology was detected either);*
- b) ranged in the oncology risk group – 17 patients.*

During clinical examination oncological incidence data were not confirmed. In dynamics there was improvement of the findings by Dynamics-100 system, that corresponded to improvement of the clinical findings.

- c) in 5 patients with diagnosed oncopathology a 100% confirmation was obtained by the data of Dynamics-100.*

Conclusions

1. Diagnostic complex Dynamics-100 has a rapid response for assessment of the body system condition, especially during case follow-up and execution of feedback in the process of diagnostics and treatment.
2. Simplicity, quickness and safety of patient examination allow to conduct case follow-up repeatedly, both outpatiently and in hospital.
3. The results of investigations, conducted in Clinical Hospital #83, are indicative of expedience of Dynamics-100 system use for selection of medicamental and non-medicamental treatment methods.
4. The data obtained by medical institutions used diagnostic complex Dynamics-100 are indicative of a high specificity in relation to oncopathology that imposes the necessity of wide implementation of this method into the work of multipurpose in-patient departments.