

Applying of Hemofiltercytological Blood Tests in Cancer Patients during the Rehabilitation Period

Chimitov A. A.¹ Dhibi Sabah^{4*}, Aida dhibi⁵, Dambaev G. Ts.², Shoihet Ya. N.³, Lazarev A. F.³

¹ Dorzhi Banzarov Buryat State University, Ulan-Ude, Russia

² Siberian State Medical University, Tomsk, Russia

³ Altai State Medical University, Barnaul, Russia

⁴Unit of macromolecular biochemistry and genetics, Faculty of Sciences of Gafsa, Faculty of Sciences, Sidi Ahmed Zarrouk, 2112, Gafsa, Tunisia

⁵.Computer science department, science college, Northern, Border University, Arar, kingdom of Saudi Arabia

***Corresponding Author:** Dhibi Sabah^{4*}, Unit of macromolecular biochemistry and genetics, Faculty of Sciences of Gafsa, Faculty of Sciences, Sidi Ahmed Zarrouk, 2112, Gafsa, Tunisia

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Abstract:

The article discusses the application of hemofiltercytological venous blood tests in cancer patients of the 3rd clinical group after special treatment in order to detect the recurrence of malignant tumors. Detection of carcinemia in blood of these patients requires their extensive testing aimed at excluding the recidivism.

Key Words: Hemofiltercytological blood testing, carcinemia, calibrated filter.

Introduction

Oncology patients after completion of special treatment are subject to regular medical check-up and periodic courses of rehabilitation and restorative treatment in the appropriate cancer care facility. Monitoring of cancer patients is carried out by determining the level of tumor markers for preclinical detection of disease recurrence. An increase in tumor markers in blood serum during the rehabilitation and recovery period is associated with neoplastic processes of various origins.

More than 200 tumor markers have been described in the literature, but no more than 20–25 of them are widely used in oncology clinics [1].

Until now, there is no unified classification of tumor markers: they are divided according to tissue or organ affiliation, chemical nature, origin and functional characteristics [2].

The diagnostic significance of tumor markers is determined by their sensitivity and specificity. A tumor marker is ideal if these indicators are 100%, and it is detected in all patients with a certain tumor and is absent in normal patients. However, to date, no such marker has

been found [3]. Tumor markers known today can increase in patients with benign processes and inflammatory diseases, but, as a rule, in these cases it is detected less frequently and in significantly lower concentrations than in cancer [4].

The key techniques for determining the level of tumor markers in blood serum include radioimmunoassay, immunoenzyme and chemiluminescence [5].

An increase in tumor markers during after treatment completion may indicate the disease recurrence, the clinical symptoms of which may express only 3–6 months later [6].

The objective of the research is to develop and study the clinical relevance of applying hemofiltercytological blood testing in cancer patients for early detection of tumor recurrence.

Materials and Methods

The study involved 67 cancer patients of the 3rd clinical group, who subject to regular medical check-up at Buryat Republican Clinical Oncology Dispensary.

Before the test, the device for venous blood microscreening had been installed. At the bottom of a glass cylinder encased in plastic casing a plastic grid with calibrated filter fixed by metal ring was placed. We had taken 12 ml venous blood from ulnar vein of patients independently of eating, diluted it in 1 ml of sodium citrate, and poured from a test tube into a glass cylinder through the upper opening. Then all studied venous blood was passed through a calibrated filter with a pore diameter of 6 µm, and tumor cells were kept in residue on the calibrated filter. The residue was delivered to glass slides, previously degreased and cooled for better cell adhesion and drying. Smears were fixed by 3% Leishman's spirit solution in 2–4 minutes. Then they were rinsed by distilled water and dyed with azure-eosin mixture in 3:1 ratio for 6–8 minutes. After dyeing smears were rinsed by distilled water, dried in air and viewed under a microscope.

Results and Discussion

The results of applying hemofiltr cytological venous blood tests in patients, who are under regular medical check-up after completion of special cancer therapeutics are presented in Table 1. As the table shows, hemofiltr-cytological blood testing detected carcinemia in 8 patients at different periods of follow-up medical care, which served a basis for their extensive testing, including imaging. After the examination, we detected relapse of the malignant neoplasm in all 8 patients, herewith the levels of CEA, CA 19-9, and CA 72-44 were not increased in 4 patients with colorectal cancer. Hemofiltr cytological testing didn't detected carcinemia in the rest 59 patients, and the follow up examination had not revealed any recurrence of tumors in them.

Patients subject to regular medical check-up after cancer therapeutics

Period of follow-up medical care	First year				Second year		After years
	1st quarter	2nd quarter	3rd quarter	4th quarter	1st half of the year	2nd half of the year	
Bloodwork results							Annua
Tumor cells detected	-	-	3	1	4	-	-
No tumor cells detected	16	13	8	7	6	4	5

Since carcinemia is biologically absolutely inherent in malignant neoplasms, hemofiltr cytological blood testing as a technique for its detection has 100% specificity.

The preliminary results also showed that hemofiltr cytological blood testing has close to ideal sensitivity.

Thus, hemofiltr cytological technique of venous blood testing in cancer patients during their follow-up medical care can be recommended for preclinical detection of tumor recurrence. The simplicity and efficiency of hemofiltr cytological blood testing allow us to recommend its application in clinical practice.

Conclusions

1. Hemofiltr cytological technique of venous blood testing in cancer patients can be recommended as monitoring during their follow-up medical care for early detection of cancer recurrence.
2. Hemofiltr cytological blood testing is simple and effective technique, which doesn't affect the quality of life of cancer patients after treatment.

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