Experience Gained with the Use of Bioactive Substances from Human Fetal Tissues in the Treatment of Oncological Diseases

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Extract from human fetal tissues whose principal component is the oncofetal protein α-fetoprotein was used in the treatment of patients with different types of tumors resistant to therapy. Out of 39 patients treated, a positive effect was achieved in 20 (51.2%). The possibility of using the delayed-type hypersensitivity reaction to extract of human fetal tissue for the diagnosis and monitoring of treatment efficacy in cancer patients is demonstrated.

Key Words: *extract of human fetal tissues; treatment of oncological diseases*

Fetal tissues have long been used in the treatment of various diseases and progress in this field has resulted in such outstanding achievements of modern medicine as transfusiology and transplantation of organs and tissues. The fact that the processes by which cells are transformed into tumor cells are linked with the derepression of certain embryonal genes, as has been demonstrated in studies by both Russian and Western scientists, explains the high level of interest accorded to fetal tissues. This phenomenon leads to the appearance of embryonal antigens (oncofetal proteins) on the cell surface and in the blood serum of a cancer patient; in health these proteins are present only in embryonal organs and tissues: carcinoembryonic antigen, α-fetoprotein, etc. [1,2]. However, the immunogenicity of surface proteins of tumor cells is low. One of the causes of weak antitumor reactions of the organism is the well-known phenomenon of tumor shielding by antibodies. Administration of a complex of bioactive substances from fetal tissues and of individual oncofetal proteins makes it possible to remove the shielding antibodies from the tumor and expose the cellular antigenic determinants so that they can be recognized by immunocompetent cells. Hence, the use of fetal tissues may be regarded as a form of active specific immunostimulation in cancer patients.

This study was aimed at elucidating the possibility of using an extract of human fetal tissues (EHFT) with a high content of the oncofetal protein α-fetoprotein for the diagnosis and treatment of cancer and at assessing the therapeutic efficacy of EHFT in different types and stages of cancer, the duration of the therapeutic effect, and possible side effects.

MATERIALS AND METHODS

Thirty-nine patients referred to clinical group IV with cancer progressing after traditional treatment were treated at the *Bioterapiya* Research and Clinical Center starting in 1992. The study has not been controlled. Water-salt extract was prepared from homogenized human abortion material at 5-13 weeks of development. Enzyme immunoassay showed the principal protein component of the preparation to be α-fetoprotein.

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Studies of EHFT on animals carried out according to the standard protocol of preclinical trials demonstrated the absence of toxic effects on the systems and organs and the capacity to stimulate cellular immunity and phagocytosis.

Intracutaneous tests were used for the diagnosis of the malignant process and for the assessment of its dissemination. The level of the cellular immune response to injected oncofetal antigens was assessed by the delayed-type hypersensitivity (DTH) reaction manifested as skin hyperemia. Before and after treatment all the patients were intracutaneously injected 0.1 ml of EHFT with 200 IU of α-fetoprotein to test their reactivity. Twelve healthy volunteers were examined for control.

The scheme of EHFT therapy was as follows: first 5 ml intravenously, once a day, after which the dose was increased to 20 and 40 ml/day, depending on the reactivity, for 4 weeks. The doses of α-fetoprotein injected with EHFT varied from 1200 to 4800 IU per injection. The patients were given total postsyndromal therapy and intensive care, including infusion therapy and electrochemical and extracorporeal detoxication, as the need arose.

The results of treatment were assessed in accordance with the WHO requirements [3]. The status of all systems and organs of a patient and the time course of the tumor process as shown by x-ray, analytical, and histological studies before and after treatment were estimated.

RESULTS

Table 1 sums up the results of treatment of patients with different diseases. A complete or partial effect was attained in 20 out of 39 patients (51.2%). Remissions were from 2 months to 4 years. Our experience indicates that the most strongly expressed reaction to EHFT is observed in patients with breast, lung, stomach, rectal, renal, and skin cancer.

It should be noted that EHFT therapy is to be considered a drastic method of treating a tumor-bearing organism, as it may cause problems with intoxication due to lysis of tumor tissue, which is hard to control. Twelve patients died in the hospital due to intoxication or internal hemorrhages caused by fulminant degradation of the tumor. The histopathological picture indicates acute immune inflammation at the sites of the tumor and metastases.

Intravenous injection of EHFT was attended by pain syndrome and fever in patients with tumors

TABLE 1. Results of Treatment of Various Diseases

Disease	Number of patients	Number of patients with specific treatment results*				
		1	2	3	4	5
Breast cancer	12	6	1	2	1	2
Lung cancer	2	1			1	
Stomach cancer	4	1			3	
Pancreatic cancer	1				1	
Colon cancer	3		1		2	
Cancer of the cecum	1		1			
Cancer of the tongue	2		1		1	
Nasal basal-cell carcinoma	1		1			
Blastocytoma of lateral nodes of the neck	1		1			
Renal cancer	1	1				
Cancer of the bladder	1				1	
Cancer of the penis	1		1			
Skin melanoma	2	1		1		
Skin cancer	2	2				
Acute lymphoblastic leukemia	3	1	1		1	
Hodgkin's disease	2		1	1		
Total...	39	13	7	5	2	12

Note. *1: full effect (complete disappearance of all signs of the disease confirmed by two examinations at least 4 weeks apart); 2: partial effect (shrinking of all tumor formations by at least 50%, observed at two examinations at least 4 weeks apart); 3: no effect (less than 50% shrinkage or less than 25% increase in tumor size. No new tumor foci appear); 4: progression of the disease (increase of tumor size by more than 25%, appearance of new tumor foci); 5: lethal outcome.

and metastases. Direct or indirect signs of tumor degradation were observed in the course of treatment in the majority of patients. There were cases where, after complete regression of tumor foci as a result of treatment, patients initially reacting to the agent with pain and fever ceased to react in such a way.

There were no allergic, hematological, or other untoward effects.

Analysis of the results of intracutaneous tests showed that none of the healthy controls developed a positive reaction to the agent. In the patients the reaction to EHFT was recorded 18 to 24 h after injection in the majority of cases, the area of skin hyperemia (0.8 to 3 cm in diameter) correlating with the dissemination of the process. No DTH reaction or a poorly expressed reaction before treatment was observed as a rule in the patients who later did not react to injection of the preparation. Whether this is a sign of poor reactivity of the organism or a specific feature of the antigenic structure of the tumor is still to be determined.

Hence, the reaction to EHFT defined as DTH can be used for the early diagnosis of a malignant process and for monitoring treatment efficacy in tumors of some localizations.

The results of this study demonstrated the possibility of using the extract of human fetal tissues containing α-fetoprotein for the diagnosis and treatment of some forms of cancer.

The absence of a reaction to intracutaneous injection of the agent in healthy subjects and the decrease of hyperemia and pain in tumor foci in cases where the tumor was able to be liquidated indicate that EHFT stimulates the specific cellular defense mechanisms in an organism afflicted with a malignancy. We believe that these phenomena are due to the high level of the oncofetal protein α-fetoprotein in EHFT, which cancels out the antibody-dependent screening of tumor antigens.

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