

SHORT COMMUNICATION

Effect of a Combination of Extract from Several Plants on Cell-mediated and Humoral Immunity of Patients with Advanced Ovarian Cancer

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The influence of a plant preparation AdMax (Nulab Inc., Clearwater, FL, USA) on immunity in ovarian cancer patients was studied. The preparation is a combination of dried ethanol/water extracts from roots of *Leuzea carthamoides*, *Rhodiola rosea*, *Eleutherococcus senticosus* and fruits of *Schizandra chinensis*. Twenty eight patients with stage III–IV epithelial ovarian cancer were treated once with 75 mg/m² cisplatin and 600 mg/m² cyclophosphamide. Peripheral blood was collected 4 weeks after the chemotherapy. Subclasses of T, B and NK lymphocytes were tested for in the blood samples: CD3, CD4, CD5, CD7, CD8, CD11B, CD16, CD20, CD25, CD38, CD45RA, CD50, CD71 and CD95. Immunoglobulin G, A and M concentrations were also determined. Changes were observed in the following T cell subclasses: CD3, CD4, CD5 and CD8. In patients who took AdMax (270 mg a day) for 4 weeks following the chemotherapy, the mean numbers of the four T cell subclasses were increased in comparison with the mean numbers of the T cell subclasses in patients who did not take AdMax. In patients who took AdMax, the mean amounts of IgG and IgM were also increased. The obtained results suggest that the combination of extracts from adaptogenic plants may boost the suppressed immunity in ovarian cancer patients who are subject to chemotherapy. Copyright © 2006 John Wiley & Sons, Ltd.

Keywords: herbal drugs; cancer chemotherapy; adaptogenic preparation; immunity; restoration.

INTRODUCTION

Some data indicate that cellular immunodeficiency is associated with human cancer (Hadden, 2003). Cancer chemotherapy, especially with cyclophosphamide, is a common cause of the decline in T cell number in peripheral blood (Berd and Mastrangelo, 1987). There is also evidence that extracts from some plants possess adaptogenic properties and are able to increase the nonspecific resistance of the human organism to stress (Farnsworth *et al.*, 1985; Szolomicki *et al.*, 2000). Extracts from adaptogenic plants are usually used as illness-preventive, fatigue-eliminating and generally fortifying remedies (Antoshechkin, 2005). This study used a combined preparation from adaptogenic plants called AdMax (Nulab, Inc., Clearwater, FL) in patients with advanced ovarian cancer who are subject to chemotherapy.

METHODS

The AdMax preparation is a combination of dried ethanol/water extracts from roots of *Leuzea carthamoides*, *Rhodiola rosea*, *Eleutherococcus senticosus* and fruits of *Schizandra chinensis*. Twenty eight patients with stage III–IV epithelial ovarian cancer were included in the study. All patients had been subjected previously to surgical operation. Then 10–12 days after the operation the patients were treated once with 75 mg/m² cisplatin and 600 mg/m² cyclophosphamide. After that nine patients took AdMax (270 mg a day) for 4 weeks and 19 patients did not take the preparation (control group). Samples of peripheral blood were collected from all the patients at 4 weeks after chemotherapy. Lymphocyte subclasses were determined using monoclonal antibodies to specific antigens of human lymphocytes and flowing fluorimetry for registration of immunofluorescence. Fourteen various subclasses of T, B and NK lymphocytes were tested for in the blood samples: CD3, CD4, CD5, CD7, CD8, CD11B, CD16, CD20, CD25, CD38, CD45RA, CD50, CD71 and CD95. The concentration of immunoglobulins G, A and M in blood serum were determined using monospecific sera and a radial immunodiffusion method (Manchini *et al.*, 1964).

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RESULTS AND DISCUSSION

There were no differences in the numbers of most of the tested lymphocyte subclasses and immunoglobulin A in the two groups of patients. Differences were observed in the T cell subclasses CD3, CD4, CD5 and CD8 and in immunoglobulins G and M. In the patients who took AdMax the mean numbers of the four T cell subclasses and IgG and IgM were increased in comparison with the numbers in the control group (see Table 1). It is worth mentioning that side effects of the chemotherapy such as fatigue and depressive mood observed in the patients of the control group were not observed in any of the patients who took the preparation.

The obtained results suggest that the combination of extracts from the adaptogenic plants may boost the suppressed immunity in ovarian cancer patients subjected to chemotherapy. Further studies will enable us to explore this possibility in greater detail.

It should be noted that this study describes the influence of one cycle only of chemotherapy on the

Table 1. Mean counts of CD3, CD4, CD5 and CD8 lymphocyte subclasses and immunoglobulins G and M in patients with ovarian cancer treated once with cisplatin and cyclophosphamide

	4 weeks after chemotherapy	
	Without AdMax (n = 19)	With AdMax (n = 9)
CD3 (cell/mcl)	852	1000
CD4 (cell/mcl)	545	677
CD5 (cell/mcl)	903	1038
CD8 (cell/mcl)	289	353
IgG (IU/mL)	175	197
IgM (IU/mL)	213	230

immunity of ovarian cancer patients. Patients with III–IV stage of ovarian cancer are usually subjected to six or more cycles of chemotherapy. It is possible that the effect of the extract combination on the restoration of the immunity will increase with continuation of chemotherapy.

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