possible that danazol may increase fertility of patients with endometriosis through its direct suppressive action on peritoneal macrophages.

Our observations also indicate that the method of determination of 5'-nucleotidase activity in peritoneal macrophages, together with clinical evaluation of the therapeutic action of danazol, can be used to identify the optimal daily dose of this preparation when used in the treatment of endometriosis in women with sterility.

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EFFECT OF EXPERIMENTAL ULTRAVIOLET IRRADIATION OF BLOOD ON IMMUNITY

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UDC 615.38.015.2:615.831.4].015.4:612.017.1].076.9

KEY WORDS: blood; ultraviolet; irradiation.

Data on the effect of ultraviolet irradiation of blood (UVIB) on the state of immunity are contradictory, and range from immunostimulation [5] to immunosuppression [1]. The view also is held that UVIB has an immunocorrective action [4], and this is evidently dependent on the initial state of the immune system. There is no single method of carrying out UVIB. Although generally similar, they can differ greatly both in the quantity of blood irradiated and in the frequency and duration of the irradiation sessions, and this again is evidently connected with differences in the design of the apparatus used for UVIB [3]. Although they share the same working principle, they differ in the configuration of the cuvettes and the distance from the source of light to the blood. Since UV radiation penetrates into blood for a distance of only 50 μ, the quantity of blood actually undergoing photomodification depends on the area of the irradiated surface. The results of the use of UVIB also depend largely on the distance between the blood and the source of radiation, for the spread of UV radiation falls away sharply during passage through air [2].

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(Presented by Academician of the Academy of Medical Sciences of the USSR A. D. Ado.) Translated from Byulleten' Éksperimental'noi Biologii i Meditsiny, Vol. 113, No. 2, pp. 178-179, February, 1992. Original article submitted July 20, 1991.

TABLE 1. Dependence of Activity of AFC Formation in Mouse Spleen on Quantity of UV-Irradiated Serum

Experimental conditions	Quantity of AFC (M ± m) dilution of serum, ml/kg respectively				
	0.1 (n=60)	0.5 (n=60)	1.0 (n=60)	5.0 (n=60)	10.0 (n=60)
Control	79 222±15142,21	57476,8±18162,12	33275,33±13012,72	61 656±20467,77	70328,4±4055,9
Experiment	83611,5±13195,69	79693,33±18263,47 $p<0,05$	98536,66±26769,52 $p<0,01$	52294,18±129 64	33275,3±13012,7 $p<0,05$

The aim of the investigation was to identify the optimal volume of serum irradiated by UV rays in order to obtain an immunostimulating effect.

EXPERIMENTAL METHOD

To determine the optimal quantity of blood needed to obtain a maximal therapeutic effect, a series of experiments was carried out on inbred mice. Male inbred CBA mice weighing 25-28 g were used. The mice were immunized intraperitoneally with sheep's red blood cells (SRBC) in a dose of 5·10 cells per mouse. After 1 h, three groups of sensitized mice were given an intravenous injection of irradiated serum in dilutions corresponding to 0.1, 0.5, 1.0, 5.0, and 10.0 ml/kg. A series consisted of three experiments, with 10 mice in each group. Injection of the same quantity of intact serum served as the control. The biological activity of UV-irradiated serum (UVIS), was estimated by its effect on proliferation of antibody-forming cells (AFC), which was determined by the method of direct local hemagglutination in gel [6] 4 days after immunization. The significance of the experimental results was determined by Student's parametric statistical test. The calculations were done on a PC/AT personal computer, using the STATGRAPHICS" (version 2.0) statistical package.

EXPERIMENTAL RESULTS

After UV irradiation of the serum in amounts corresponding to 0.5 and 1.0 ml/kg, AFC formation was activated by 1.4 and 3 times respectively (Table 1).

Table 1 shows that injection of UVIS in a volume of 5.0, and still more, 10.0 ml/kg led to a more than 50% reduction in AFC formation.

It is interesting to note that injection of 0.1 ml/kg of UV-irradiated serum caused no appreciable change in AFC formation, confirming the immunomodulating property of UV-irradiated blood, according to the principle of reciprocity: a small quantity of UV-irradiated serum stimulates the immune response, a large quantity inhibits it.

It must be pointed out in this connection that in apparatuses of different designs the area of the irradiated surface differs, or in other words, the quantity or irradiated blood is determined by the area, for UV radiation can penetrate only 50 μ into the depth of the blood layer. Consequently, if the same volume of blood is irradiated in devices of different configuration, different amounts of blood will in fact be irradiated. Hence it follows that each apparatus has its own optimal quantity of blood which must be subjected to photomodification.

Since, as our findings show, the boundary between the immunostimulating and immunosuppressing action of UV irradiation is extremely narrow, it is important that the quantity of blood to undergo UV irradiation be chosen with the utmost care. In the light of this, in our view it is inappropriate to begin the work with a larger volume of blood than 1 ml/kg.

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INTERACTION OF INTERFERON WITH OTHER IMMUNOMODULATORS REGULATING HUMAN NATURAL KILLER CELL ACTIVITY

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UDC 615.339:578.245+615.275.2/.275.4]:612.111/.112

KEY WORDS: interferon; immunomodulators; natural killer cells; regulation.

In our research into regulation of activity of natural killer cells (NKC), which constitute the main cell population in the natural cytotoxicity (NCT) system, we found a definite similarity in the properties of T-activin (TA), a stimulator of antibody producers and interferon (IFN), manifested in particular as stimulation of NKC activity in the presence of low effector to target (B:T) ratios was discovered [7]. Considering that the question of the origin of NKC has not yet been answered (compare [1] and [2]) this result has been regarded as evidence that all three factors are involved at a certain stage in regulation of maturation of NKC precursors. The key place of IFN in activation of NKC and induction of their maturation [14, 15] suggested that the study of regulation of NKC by IFN in combination with peptides controlling individual stages of immunity, and possessing a definite action on NKC, would lead to an understanding of the principles governing differentiation of these cells in man.

The aim of the investigation was to assess the action of reaferon (RF) (human recombinant IFN-α_2) in conjunction with regulatory peptides of varied origin on NKC activity in vitro in healthy individuals and patients with multiple sclerosis (MS). MS was chosen as the model because in this disease there is an IFN-dependent NKC deficiency [5], IFN preparations are widely used in the treatment of MS [12, 13], and definite positive results have been obtained in the clinic for nervous diseases of the N. I. Pirogov Second Moscow Medical Institute by treatment of patients with MS by T-activin, myelopide (MP), and dalargin (DL). Altogether 20 healthy blood donors (four men and 16 women) aged from 18 to 46 years and 34 patients with MS (12 men and 22 women) aged from 16 to 55 years, with a remittent course of the disease, the duration of which varied from 6 months to 12 years, and with different degrees of disability on the Kurtske scale, were investigated.

EXPERIMENTAL METHOD

Mononuclear cells (MNC) were isolated from peripheral venous blood of the healthy subjects and patients in a one-step Ficoll—Paque density gradient (Pharmacia Fine Chemicals, Sweden), d = 1.077 g/cm^3 [9].

The cytotoxic activity of NKC was determined by a radiometric method, against target cells (TC) of human erythromyeloleukemia K-562 [10], labeled with ^{3}H-uridine in a dose of 3 μCi/ml, in the modification in [3]. Combined incubation of MNC and TC was carried out for 14 h at 37°C in a humid atmosphere containing 5% CO_2. Complete nutrient medium based on RPMI-1640, used for incubation, had the following composition. RPMI-1640 (Amimed, Switzerland) 88 ml; bovine embryonic serum (N. F. Gamaleya Research Institute of Bpidemiology and Microbiology, Academy of Medical Sciences of the USSR) 12 ml, HEPES (Serva, Germany) 10 mM, glutamine 2 mM, gentamicin (Pharmachim, Bulgaria) 40 μg/ml. The E:T ratio ranged from 100:1 to 6:1.

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