AUTO ANTIBODIES AND BONE - MARROW DERIVED CELLS IN CHRONIC DIOXIN EXPOSED VETERANS

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Abstract: The authors studied some auto antibodies and bone marrow derived cells in 28 chronic dioxin exposed veterans (25 of the 1994 new group - group 1 and 3 reexamined cases of the latest year group - 1993 - group 2). Dioxin concentration in pool blood of our veterans: 6.1 ppt/lipit, TEQ: 40.3 while in the control group: 1.2 ppt and TEQ: 12.0 (Schecter S. 1994)

The antinuclear antigen (ANA) are detected by IIF technics with Hep-2 cell line, the sperm-auto antibodies by agglutination test of Franklin - Dukes (F.D). The site of antibody binding on spermatozoon by IIF test. The bone - marrow derived cells are counted in Hycel haemocytometer and bone marrow biopsy is indicated when 2/3 line age are suppressed.

Obtained results show that only the monocytes decrease significantly ($p<0.01$). The red blood cells and the platelets are with normal values, no indication for bone-marrow biopsy. No ANA is detected in 25 cases of group 1 but 2/3 veterans of group 2 (who had brought ANA positive in April 1993) have ANA strongly positive.

There is no difference in positive sperm-auto antibodies rate and titer between studied veterans and controls.

INTRODUCTION

As showed in our studies in 1988 and 1993 in chronic dioxin exposed veterans, the cell - mediated immune reaction decrease while some non-specific humoral response remain unchanged or even increase. The anti - ANA in many of them are very high with severely decrease in T lymphocyte/ B lymphocyte ratio and peripheral blood monocytes (3,4).

The group studied by the 10.80 Committee consists of 28 veterans: 25 newly investigated (group 1) and 3 cases previously examined (group 2) bringing very high ANA titer. Clinical investigations of these veterans showed: 22/28 with evident cerebral circulation insufficiency, 3 with hepatic deficiency, 1 with secondary unfertility, 2 having their children dead from cancer (acute myeloleukemia and bone), 1 having monstrous infant, 7 having their children with congenital malformations (1-3 children/family), mental retardation, skin disease, new-borne dead, 2 females with repeated abortions (one of them with repeated abortions and child malformation). Dioxin pool blood concentration of veterans are high: 6.1 ppt/lipit TEQ 40.3, while the dioxin concentration in control group in North Vietnam is 1.2ppt and TEQ: 12.0 (Schecter Suny - 1994).

The ANA, sperm-auto antibodies and bone - marrow derived cells are checked in veterans, bone marrow biopsy is done if necessary.

Materials and methods

For ANA detection: 28 veterans of 52.3 $\pm$ 8.4 years old.

Control group: 63 healthy persons at the same age.

IIF technics with anti-IgG - FITC (Copenhagen) are used with Hep-2 cell line for ANA detection.

For detection of sperm - auto antibodies: 26 veterans and control group: 36 healthy males, 28-63 years old, having 1-2 children. Agglutination test of Franklin - Dukes is used. The site of antibody binding on spermatozoon is detected by IIF technics.

Rabbit anti - human sperm serum is used for positive control and fresh sperm (at least 70% are active) with concentration of 5.10^7 spermatozoons/ml with Baker buffer.

Anti - Ig - FITC (Copenhagen), anti - IgM - FITC (Amsterdam).

Bone - marrow derived cells are counted in Hycel Haemocytometer including white blood cells, red blood cells, hematocrit, hemoglobin, mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC) and platelet counts.

Bone - marrow biopsy is indicated when 2/3 line age are suppressed.

Results and discussions

1. ANA in 28 veterans:
   In group 1: no ANA is detected
   In group 2: 2/3 have positive ANA (one case at 1:80, one case at 1:640).
   In control group: 8% are positive, all at titer $\leq$ 1:80
2. Sperm - auto antibodies: 1/26 veterans (3.8%) have sperm-auto antibodies at titer 1:8
   1/36 (2.7%) control healthy males have sperm- auto antibodies at titer 1:16
3. The site of antibodies binding on spermatozoon is at acrosome and at the neck and tail.
4. Bone marrow derived cells in 24 veterans

Table 1: Bone marrow derived cell values

Parameters	Mean + SD	Compared with normal values of VN people
White blood cells (10^3/mcl)	6.91 $\pm$ 1.99	$p < 0.05$
Monocytes /mcl	1.31 $\pm$ 71	$p < 0.01$
Red blood cells (10^6/mcl)	4.48 $\pm$ 0.519	$p < 0.05$
Hematocrit % (hct)	47.2 $\pm$ 4.31	$p < 0.05$
Hb (g%)	14.92 $\pm$ 1.120	$p < 0.05$
MCV (fl)	107.16 $\pm$ 6.59	$p < 0.05$
MCH (fg)	34 $\pm$ 2.6	$p < 0.05$
MCHC %	31.6 $\pm$ 1.4	$p < 0.05$
Platelet (10^3/ml)	205.42 $\pm$ 62.31	$p < 0.05$

All 25 cases of the group 1 are ANA negative, 2/3 of the group 2 are ANA strongly positive. May be there is an acceleration of ageing phenomenon caused by chemical or physical intoxication or an individual auto-immune disease? (2.7).

Normally, sperm-auto antibodies are present in 2-8% of healthy men (1). Sperm-auto-antibodies only effects the fertility when titer is $\geq$ 1:32 (5.8).

The normal rate of sperm-auto-antibodies with normal titer of investigated veterans concord well with the absence of ANA in almost studied cases.

CONCLUSION

Results obstained in 28 veterans divided in group 1 (25 cases), group 2 (3 cases follow-up from 1993)

1. There is a siquificant suppression of bone marrow derived monocytes, while the red blood cell and platelet cell counts remain normal.

2. No ANA is detected in group 1, but 2/3 veterans of group 2 (who had ANA positive in April 1993) have ANA strongly positive.

3. There is no difference in positive sperm- auto antibodies rate and titer between studied veterans and controls.

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