Materials of the Conferences

THE DYNAMICS OF CLINICAL HEALTH OF THE COHORT GROUP EXPOSED TO CHLORANATED DOSES OF TCDD

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Abstract: The data on the dynamic clinical 40-year observation of health promotion of workers with chloracne who were involved in the production of 2,4,5 T are presented in the paper. The clinical picture of intoxication was characterized by moderate cytopenia, hypercholesterinemia, vegeto-vascular dystonia with background chloracne signs. Postcontact follow-up data on a closed cohort aged 23-63 years showed the disappearance of chloracne manifestations, but there were signs of pigmentation, proliferative formations. Mono-lymphocytosis was found in blood samples. There is evidence of an increase in the number of lipids, enzyme activity, blood coagulation, biological age. Functional disorders of the neuro-vegetative and cardio-vascular systems are transformed into clinically marked destructive diseases such as IHD, infarcts, insults, tumours that shorten the life span.

Introduction: During the past decades, studies involving experimental, environmental and epidemiological surveys of many scientists as well as our own data on clinico-functional manifestations and medico-biological consequences of dioxins have shown these supertoxicants to be hazardous in their impact on health of exposed individuals and their offspring. The toxic substances originate the development of numerous geno-, phono- and locally specific effects.

Most investigators (1-4) believe that due to their cumulative characteristics dioxins produce a long term hormone-like impact on the development and functioning of the body systems. Even though the contact has ceased, the formation of a broad spectrum of clinically manifested and subclinically multilevel health disorders is in progress.

Materials and Methods: Enrolled in our study is a group of individuals who were involved in the production of 2, 4, 5 T between 1965 and 1967. All 128 workers developed chloracne. We have been following these occupationally exposed subjects with chloracne manifestations since 1990.

Results and Discussion: Retrospective analysis showed the absence of dioxin content measurements during technological processes of 2, 4, 5 T production. According to calculations by L.A. Fedorov (1993), dioxin content in the end product was no less than 30-40 mg/kg (5). The singular clinically-based medical examination revealed chloracne in 85,3 % of workers. Long term treatment resulted in the disappearance of this disease signs. So, the first complex clinico-functional examination of exposed workers was conducted with background chloracne clinical signs.

The majority of male patients were at the age of 20-26 years. The mean age of the whole cohort was 23±2,5 years. The examination detected typical chloracne in all of them. Moderate neutropenia, lympho and monocytopenia were found in peripheral blood of 32-37,7 % of workers. Hypercholesterinemia was detected in 43,8 %. Every other subject (46,0±4,3) had vegeto-vascular disorders of sympathico-adrenal origin. Clinically marked diagnoses are mainly associated with vegeto-vascular dystonia, chronic gastritis, cholecystitis, bronchitis.

The subjects whose mean age was 38 years were re-examined in 1984/1985. There was no evidence of chloracne. However, numerous pigment spots of various intensity, hyperkeratic and papilo-like formations were found on their back and hips. The number of cardiovascular pathology cases with clinical formation of hypertensive and ischemic diseases increased significantly. Two cases of myocardial infarction and diabetes mellitus were detected. The blood sample was characterized by a moderate elevation of white blood cells. The level of activity of enzymes, autoimmune processes tended to be high. There was a distinct trend towards immunity suppress.

Ten years later, between 1990 and 1995, further investigations were carried out. Alongside with the studies conducted between 1996 and 2006, they confirmed an elevation in the incidence of atherogenic pathologies including lipidemia, enzymopathy, hypercoagulation, atherosclerotic processes in the brain and heart vessels. Every fourth individual aged 46-53 years was found to have CBS, myocardial infarction and brain insult. The increased rate of cancer was observed. There was evidence of an increase in diseases in every subject.

Table 1. Presented is the dynamics of the cohort clinical health (in %)

Years	1966-67	1984-85	1990-95	2004-2006
Age / Clinical signs	20-26(M=23± 2,5)	38-43(M=38± 3,3)	47-53(M=51±1,4)	63-70(M=63±2,5)
Cardiovascular: ECG- Arterial Hypertension	52,6±3,4 AH-40,0(20)	78,8±7,1 58,8(15,4)	100,1±0,5 56,5(31,3)	100,0±0,3 40(82,2)
Cerebral circulation disorders Ischemic heart disease	-	IHD - 13,0	IHD - 25,4 MI, CCD	CCD, IHD, MI
CNS: VVD NCD	46,3±4,3 16,6±2,0	56,0±5,6 encephalopathy	NCD encephalopathy	NCD encephalopathy
Respiration: Ch. bronchitis	5,4±1,1	8,3±1,2	12,5±1,6	19,2±2,1
Alimentary tract: ch.gastritis ch.cholecystitis	21±2,4 14,4±4,1	36,6±6,0 16,8±4,0	38,7±4,5 16,7±2,3	37,2±2,4 19,1±2,8
Skin:chloracne, eczema, dermatitis	100,0 6,0	2,0 7,0	- 3,0	- 2,6
Endocrinology: diabetes, thyroid gland	- 1 case	2 cases 2 cases	2 cases 2 cases	2 cases 2 cases
Others: dental cancer	- -	38,4 1,4	88, 4,7	100,0 19,2
Blood: leukocytes eosinophils lymphocytes monocytes hypercoagulation	 reduced 19,5 higher 28,9 lower 37,7 lower 32,1 no evidence	 increased 11,0 higher 18,1 higher 11,0 higher 25,0 42,7±1,7	 Normal normal higner 18,6 higner 33,8 53,4±3,7	 Normal normal higner 20,0 higner 35,7 83,4±4,3
Biochemistry Glucose Cholesterin β Lipoprotein BLOI Mean molecule	No evidence No evidence Normal 43,8 no evidence no evidence no evidence	increased 18,7 increased 14,4 normal no evidence no evidence no evidence no evidence	increased 25,7 increased 18,9 increased 10,0 increased 49,6 increased 10,2 reduced -14,0 increased 77,4	increased 22,3 increased 24,4 increased 12,6 increased 56,6 increased 18,8 reduced 21,2 increased 81,25
Immunol.lymph. B lymph. Olyph. Im.A CIC	No evidence No evidence No evidence No evidence No evidence No evidence	Reduced 50,0 Reduced 51,0 Increased 60,0 increased 13 increased 12 increased 14,0	reduced 64,3 reduced 34,3 increased 51,4 increased 17,4 increased 16,4 increased 17.0	reduced 77,0 reduced 34,6 no evidence increased 20,0 increased 22,8 increased 19,5
Number of diseases per person	1,0	1,4	3,7	8,0

Now that the mean age of the cohort studied is 63 (from 63 to 70 years), it is obvious that marked atherogenic processes and disorders have increased with age. However, comparative health studies of the cohort and controls matched in age show the rate of disorders in subjects

exposed to dioxins to be significantly elevated over controls.

Special calculations of the cohort biological age showed that individuals with a history of chloracne were 18-20 years older than their calendar age. There was a 1,5 fold rise in mortality rate compared with the general city population. The mean age of dead people was 52,3±4,3 years.

Thus, the dynamic health follow-up of workers exposed to dioxins in the cohort group aged 23 – 63 years has shown that skin disorders like chloracne disappear but pigmentation and proliferative processes occur. Cytopenic reaction is associated with a trend toward a decrease and replacement by mono- and lymphocytosis. Levels of lipids, enzyme activity, blood coagulability, and biological age increase gradually. Functional disorders of the neuro-vegetative and cardiovascular systems are gradually transformed into clinically marked destructive diseases such as IHD, infarcts, insults, tumours that shorten the life span.

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EDUCATION IN OPEN SOCIETY: PROBLEMS OF VARIABILITY

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Large-scale sociocultural transformations of the 90-s of the XX century brought our country to the state of openness, defined the way to develop an open society. The law of the RF “On education” opened unseen until then opportunities for educational institutions’ types and kinds diversity growth, educational programs variability, their development terms, forms and methods of teaching, using innovation technologies including control-valuation activities, alternativeness of learners’ accountancy forms. Delimitation of authorities and competences between state and private educational institutions, federal, regional and municipal authorities promoted educational democratization. More than that, not only the teacher and the pupil, the lecturer and the student were named the subjects of education; directly or indirectly parents, community and business leaders, employers turned the ones. The “Educational loan” became brand-new and promising opening real ways to get education for an ample quantity of the desirous.

Lively started deregulation of education has been intensifying since January, 2005, opening a prospect to state educational institutions’ share reduction; that, however, doesn’t mean a “withdrawal” of the state from the educational system. Its attendance is carried out in a variety of ways, among which the availability of national educational standards (unfortunately, being for long in the state of projects). On the one hand, they go on performing regulating function (if not a dictate concerning the “liability” of subject fields, specialties, duration and extent of discipline studies and their contents); on the other hand, - protective function – from arbitrary actions in education (including its contents and efficiency criteria of educational process).

A standard (Eng. norm, pattern, measure, foundation) as a notion is connected with achieving certain norms of quality reduced to typical markers. Let us focus our attention on interpretation of the notion “standard” as a *measure of quality, foundation of quality,* that