

Biological weapons and some questions of biodefense

1. Outline of scientific problem

The role and the evaluation of general significance of Weapons of Mass Destructions (WMD) (acceptance or/end rejection) shows extremely excessive alternation since the huge gas attacks of I. WW and the atom-bomb explosions in Japan. The historical and the political effect of WMD were tried to restrict by the international non-proliferative bans (CWC, BTWC, Restriction of Atomic weapons) with partial success. Nevertheless there is a sad reality that the threat of WMD-s has become a part of our everyday lives. Its influencing effect has become our unsolicited partner of our lives in spite of some optimistic ideas and contrary to all expectation. After the cold war the disruption of bipolarised world of super powers apparently extinguished the intensive interests for WMD for a short time. It was thought, that the world might be able unload us from the nightmare of war by combined arms warfare with WMDs. Unfortunately this dream could not be realized totally and I never could agree with this optimistic opinion during my work. It is true, that the extremely huge mass armies were relayed by strongly smarter professional armies using other different doctrines and conceptions of fighting operations. Comparing with the events of last two decades (see Afghanistan and Iraq) it can be declared, that the effective operations of armies are unimaginable without special capabilities of effective NBC defence and well trained personal staff against WMDs. The owners of NBC capabilities are divided in the HDF the chemical defence forces (with severe traditions) and military medical service. The latter one formulated its aims in the fresh conception (theories and practice) in the Integrated NATO harmonized Health Force Protection doctrine.

It is doubtless that today the humankind has a wide range of sortable dangerous risk factors of global life, as natural and social disasters, intensive and large environmental degradation, global climatic change or overcrowding of Earth, which are may cause urgent challenges for humankind and for the sustainable development. The competition of cumulative threats of modern life can make diversion, but the threats of WMDs remained likely unchanged, even - It seems to me - theirs significance were increased.

The origins of multiple tasks are well illustrated by the facts that in spite of intensive non-proliferation activities of world the club of atomic weapons owners expanded with India and Pakistan, and probably, that this process has not been finished yet. The growing interest of

international terrorism is verified and the modern dispersion of satellite guided digital technologies of rockets (North-Korea, Iran) also enhanced the vulnerability of our world.

On the base of mentioned facts, it is a vital question for armies to declare the importance of effective NBC defence theories again and again to consider, possibilities of „the worse scenario”. My personal solid opinion is while the silos of rockets are alive, there are no any omittable dimension of fight against WMDs, and constantly have to support the sources of force for a undefinable time. In the same time can be seen well, that there are many changes in the territory of NBC defence questions, and could be realize a well determined modification of stresses. These changes were generated by modifications of level of integration and complexity of structures and tasks of governmental, military and non-governmental organizations, and last but not least Hungary joined the NATO (1999), later became a member of EU (2004).

Altogether these circumstances - by the rule of risk estimation – seriously influenced the extents of threats, but also extend the possibilities of response abilities. At last need to deal with the deep effects of developments of other sciences, which are able to widen formerly unmarked possibilities of the laboratory procedures of NBC defence from large measuring equipment to applied genomics.

The biological weapons as one of a form of WMDs and the biodefense creates a whole unit in the realization operational goals of fighting and the protection of health of personal staff of armies, so this one (the biodefense) means a strategic question of armed forces. The field of biodefense formulated in the NATO NBC principles and in the guide of Health Force Protection. The attention for biological weapons and for the support of biodefense fluctuates from time to time. I need to examine these movements because:

- a. Undoubtedly the interest of international terrorism for CBRN applications is growing.
- b. The background sciences has developed explosively
- c. Consecutively information of NBC methods has expanded. These processes obliged us to re-evaluate the status of national principles and practices of CBRN defence from the point of view of war sciences as well.

- d. The roles of international cooperation of our nation and our EU and NATO memberships give possibilities and demand requirements for the realization of effective and modernized medical force and homeland (country wide) protection.

2. AIMS OF RESEARCH

My aim was in my research to add some contributions for the development of defence capabilities of HDF and Hungary with summarising of principles and methods of biodefense to reach a higher level CBRNE defence.

For these purpose:

- I summarized the former and actual status of biological weapons.
- I wanted to examine the procedures methods and their system of interrelations
- I tried to work out at first a new comprehensive model of the integration new conceptions and best practice into the medical support system of HDF, than put into the new NATO recommended medical doctrine named Medical Force Protection.
- I critically researched and summarized the different main forms of diagnostic methods of bio agents, and the equipment of biodefense.
- I intended to utilize the NATO and EU information sources for the actualization CBRN defence conceptions.

3., APPLIED METHODS OF RESEARCH

My research methods involved both theoretical and practical procedures:

In the theoretical work: (survey of scientific literature, collecting data, analysing and evaluation):

On the field of survey of scientific literature:

I analysed and evaluated comprehensively and continuously the collectable publications, results and theories according to the biological weapons, and biodefense in the international and Hungarian sources. I used up experiences and the collected acknowledge of BTWC conference of expert committee, NATO COMEDS, SDG for anti-proliferation, NSA for the effective evaluation processes where I could stay as a Senior Epidemiologist of HDF, as a General Director of Military Institute of Health Protection of HDF, and now as a Head of

Department of Rapid Response of OCMO. I served the better acceptance of problems of biodefense - as a contribution - with 31 publication and more than 70 presentations. It sought to apply my knowledge of epidemiology into biodefense development as well training of biodefense.

I examined, verified and published the unknown circumstances and war historical data of early Hungarian offensive trials for production of biological weapons in the II. WW.

In the field of practical work: planning, development, producing, organization, and laboratory work):

Organization: I prepared different NATO harmonized versions for the preventive medical tasks as a part of medical support doctrine of HDF.

Technical developments: I took a part in the whole procedures of the second generation microbiological-serological laboratory from the planning till the production at (codename: BSL) and in the containerization of third generation laboratory (codename: TMLK).

In the laboratory work: I collected experiments in the development of Hand Held Test Kit of bio agents.

4. SUMMARY OF RESULTS BY CHAPTERS.

1. Chapter:

I examined the changes of judgement of biological weapons, the factors of modification, and relationship to other WMD.

2. Chapter

I explored the different forms of relations of military health sector to biological weapons from point of view of epidemiology, the connection between wars and epidemic/infectious diseases and I summarized the modifications of military health service, situation can which should influence the general security policy.

3. Chapter

I studied the history of biological weapons, examined their war-historical consequences and presented the different theories of biological weaponization.

4. Chapter

I explored the effect developments of most determinative scientific knowledge of natural sciences from respectively for biodefense.

5. Chapter

I summarised the most frequently used basic definitions on the field of biological weapons and operations. I tried to expose the connections between definitions along with their background scientific information and influence on the defensive systems.

6. Chapter

I examined the phenomenon of bioterrorism and illustrated through three didactic samples that have deeply changed not only the theories of war sciences and health sciences but also international legislation, governmental work and our whole life, as well.

7. Chapter

In my opinion the basic principles of biodefense are interested in a quite narrow circle of experts because of special profession, so I wanted to show different dimensions at different levels and some selected crucial parts of biodefense system, what is named as „the system of system” starting from strategic level through military aspecific biodefense for the main elements of medical biodefense procedures. I analysed the changes of preventive medicine, the risk management and the status of biodefense. I summarized the tasks of epidemic intelligence, the procedures of epidemic measurements. I analysed different isolation technics in field medical surrounding and static building consequence with biological operations. In addition I summarized the possibilities of quarantinesation as an ultimate tool of collective defence. I highlighted the central importance of modern decontamination with special interest in the role of protection of civilian population. I shortly summed up the medical limitations and problems in developmental work of personal and collective protective equipment in the medical support, and questions of medical disinfection, deratisation and desinsection. I examined also the potentials of medical prophylaxis (chemo- and active/passive immunoprofilaxis). I presented the main focal directions of diagnostic procedures and critical points (as sampling and transportation of infectious samples) in the identification of bioagents from classical microbiological methods until the appliance of large instrumental measurement technics.

5. SUMMARIZED CONSEQUENCES

1., I realized during my research, that the biological weapon did not lose his significance at all. Its threat is widely influencing the life of humankind even in the near future. On the basis of risks the application of biological weapons is prognostisable and determinable objectively, and we can not neglect biodefense for an unpredictable long time.

2., Beside the Health Force Protection of HDF need to analyse the defence questions of civilian population in Hungary as well, and must enforce the defensive capabilities and capacities of our country

3., The territory of biodefense is in the focus of distinguished attention internationally in the WHO, NATO, also EU. I examined and presented the possible elements of medical biodefense and explored directions of developments. On the base of complex view I have the opinion, that need to enforce the capabilities all territory (both military and civilian) which are demanded massive sources of forces. I think so, that in many cases the better organisation and intersectorial cooperation could be very helpful without any serious investment.

6. NEW SCIENTIFIC RESULTS

1. I summarized comprehensively the general knowledge of biological weapons, and I pointed at the differences between the palette of regular and bioterror agents first.

2. I explored the offensive biological weapon developmental pursuits of Hungary during the II.WW - what was earlier nearly unknown - I could verify the data reality of formerly hidden sleeping document. I wished to make a more precious picture of war history of biological weapons.

3. By analysing the actual status of biodefense I came to the conclusion, the HDF might be one of that organisation – on the base of its traditions, commitments and responsibility for defence of country and by the long experience after an effective enforcement of Chemical Defence and Medical Service, who would be able to play central roles in the CBRN defensive operations of State.

4. I worked actively in creation of the second and third generation mobile field laboratory containers both theoretically and practically. (BSL 1979/80) and (TMLK 2006, awarded by Golden Mask).

5. I summarized and analysed the role of international terrorism (on the base of open source data) and the suspected and real connections to biological weapons. I could generate a better acceptance and more effective scientific interest for the bioterrorism among possible decision makers, responders and in Hungary.

6., By the available sources of NATO documents I analysed the different possible measurement of biodefense integrated into the Health Force Protection system of HDF, also I surveyed and assessed the general status of medical measurements and consequently I made recommendations for some selected effective solutions of defensive procedures including as legislation of (IHR-2005) of governmental direction.

7. PRACTICAL BENEFIT OF RESULTS OF RESEARCH

The paper opened several narrower part-fields, what could help to select more additional research directions and could offer more targets of research for others in the field of biodefense.

The third generation TMLK is in active duty in the system of Health Force Protection of HDF.

I drew attention and made recommendations for the enforcements of military and civilian defence according to mass decontamination, and in other branches of biodefense. Perhaps it can be useful for the production of training materials.

8. RECOMMENDATIONS.

The symptoms of asymmetric development can be realized not only between farer countries and their armed forces, but also we have to face with these differences in the same international allied military systems (NATO) or among states of the same union (EU). We have to utilize all of positive conditions of international collaboration to replace the lag of developments.

From the years of cold war time the amortization of the former defence military infrastructure significantly diminished the capacities of biodefense, at the same time derogated the availability of prophylactic materials (antidotes, antibiotics, capacity of mobile decontamination stations, etc.). These tendencies lead to decrease the level of general defence capacities of Hungary.

Need to find new training methods for postgradual medical education and in the general training of civil population to make them better informed the rules of self defence against biological dangerous threats (epidemics, bioattacks, some of natural disasters). There is a

necessity to open wider space for home industrial capacities in the R + D field of CBRN defence.