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HEALTH HAZARDS IN CENTRAL ASIA ON AFGHANISTAN EXAMPLE

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Introduction

Traveling to Afghanistan nowadays is truly health- and life-threatening (1, 2). Destroyed country infrastructure, low sanitary and epidemiologic conditions, low level of medical assistance (lack of medical personnel, shortage of basic medicines and hygienic means) – all contribute to the dissemination of many infectious and non-infectious diseases (3-5). More than 70% of the health care functioning in Afghanistan is dependent on the help of foreign humanitarian organizations (6-8). Afghanistan is a region of an extreme danger of terrorist and criminal attacks. Bomb attacks, thefts, kidnappings mostly directed against Stabilization Forces soldiers and humanitarian organization workers have become the order of the day. Remains of the wartime are visible in the whole territory of the country with mines and unexploded shells posing the highest danger. Just traveling on Afghan roads is extremely dangerous because of their catastrophic technical condition and notorious disobedience of traffic rules by local riders (1, 9). In July 2005 the population of Afghanistan was assessed at 29,929,000 but these data are only approximate because of regular migrations of Afghans abroad, mainly to Pakistan and Iran (during the last three decades approximately 5 million Afghan people have emigrated, and 3.1 million of these have returned), and also within the

country (approximately 2 million of internal refugees during the civil war, nowadays the internal displacements are estimated at 200,000 people) (10,11).

Afghanistan is a country of a highest population growth rate, estimated at 4.77% per year in 2005. The fertility rate is 6.75 children per 1 Afghan woman. In 1979, 15,682,000 inhabitants lived in the country, so during the last 25 years the population have increased by more than 90% in spite of the high mortality rate caused by warfare, famine and diseases. According to the United Nations calculations, at the present birth rate the number of Afghans may have reached 97 million by 2050! An average Afghan is very young. In 2005 as many as 44.7% of the population were below 14 years of age, 52.9% in the age range 15-64, and only 2.4% were over 65 years old. The mean age of an average Afghan is 17.56 years. The population health status parameters place Afghanistan among the poorest countries in the world. The total mortality rate is estimated at 2.07% (20.7 deaths/1000 inhabitants per year), infant mortality rate (under 1 year old) – 16.3% (163 deaths/1000 live births), that of children younger than 5 years – 25.7% (257 deaths/1000 live births). Life expectancy at birth of an average Afghan is estimated at 43 years only, and one per four Afghan children dies before being 5 years old (10,12-14).

Infectious diseases

Afghanistan is considered to be a country where the risk of infectious diseases occurrence is very high. This situation results mainly from contamination of water and soil, limited access to uncontaminated drinking water, catastrophic status of plumbing, water and sewage treatment plants, limited access to health-care institutions, lack of basic medicines and medical equipment (3,15). Another health risk factors are numerous asymptomatic carriers of infectious diseases among local population, mass migrations of people (inside and outside the country), overcrowding in refugee camps, large territory of endemic areas, and high number of vectors of infectious diseases (16,17).

Vector-borne diseases

Malaria. Approximately 80% of the disease cases are caused by *Plasmodium vivax* but in the recent years an increased number of cases have been caused by *P. falciparum* (18,19). The disease occurs seasonally (April through November) and endemically in the most part of the country, usually below 2000 meters above sea level, along river valleys, in rice farmland, near water reservoirs (20-22). A research study conducted by the World Health Organization experts has revealed that nowadays malaria occurs in Afghanistan also at higher altitudes. A high malaria incidence rate was confirmed in the local population of the Bamian province (2250-2400 meters above sea level). Most of the cases had been caused by *P. falciparum* (23). Today in Afghanistan, malaria contributes to 10-20% of all pyretic diseases (24,25). The studies carried out in 2002 revealed that 10% of the Afghan population living in areas below 1500 meters above sea level were infected with *Plasmodium* parasites (25). In 2003 Afghan medical services registered more than 591 thousand suspected and confirmed cases of malaria in the whole country (26). However, the anecdotal number of all malaria cases in

Afghanistan is estimated at as many as 3 million per year (21). In the Jalalabad region, with its irrigated areas of rice cultivation, the morbidity rate is estimated at 240 cases/1000 people per year (21). Malaria cases are observed in villages and in towns, including the capital city of Kabul. In the early 1980s, the number of malaria cases caused by *P. falciparum* did not exceed 1-2%. Nowadays it reaches 20%, which mainly results from an increased resistance of *Plasmodium* parasites to the treatment used so far (Chloroquine), and an increased insensitivity of infection vectors (*Anopheles* mosquito) to pesticides employed (21,27,28).

Leishmaniasis. Two clinical forms of the disease occur in Afghanistan: cutaneous and visceral (*kala-azar*). Cutaneous leishmaniasis (CL) in the Afghan territory is caused by *L. major* (wild rodents are the source of infection, e.g. gerbils) and *L. tropica* (human source of infection) (3,17). Most CL cases in Afghanistan are caused by *L. tropica* (29). The disease is encountered endemically countrywide, in the west (Herat), south (Kandahar), north (Mazar-e Szarif), and east (Kabul) (20,22). Kabul, the capital city of Afghanistan, is nowadays the biggest focus of cutaneous leishmaniasis in the world. In 1996 the number of cases was estimated at 270 thousand (3,20). In 2001, 2.7% of Kabul inhabitants (out of total nearly 3 million) had active skin lesions resulting from CL, and 21.9% displayed post inflammatory scars (20). The number of CL cases in Kabul in 2003 was estimated at 67,500 (5), however, given a massive influx of external refugees from Pakistan and Iran, and internal displacements from other regions of the country, who can contribute to an increase of the infection rate, the disease morbidity and incidence rates are bound to become higher (29).

Visceral leishmaniasis (VL) in Afghanistan is caused by *L. donovani*. The source of infection is of animal origin

(dogs, foxes, jackals). This form of the disease occurs much less frequently than CL. The endemic areas are located in the western part of the country (20). The transmission of cutaneous and visceral leishmaniasis occurs in Afghanistan seasonally, from April to October (30).

Crimean-Congo Hemorrhagic Fever. In 2000, 27 cases of the disease (including 16 deaths) were registered in the Herat province (20,31). Another 47 cases in the region of the Afghan-Pakistani border were recorded in 2001 (3,17). In March 2002 unknown hemorrhagic fever (Crimean-Congo is suspected) killed 28 people in eastern Afghanistan (3,17). In the Afghan territory the transmission of the disease occurs from May to October (30).

Food- and water-borne diseases

Diarrheas. The diarrheal diseases morbidity risk in Afghanistan is high regardless of the season of the year. Seemingly, diarrheas can pose no health problem to the local population, as the number of asymptomatic carriers is rather large. On the other hand, diarrheal diseases are quite common because food and water are contaminated not only with human and animal excrements but also with pesticides and toxic industrial chemicals (15,18). Diarrheas are responsible for more than 50% of deaths among children under 5 years of age (6,32). In 2004, in Kabul only, more than 6000 cases of diarrheal diseases were registered weekly, half of them affected children younger than 5 (32). Only 7.7% of Afghans have access to tap drinking water (2003). Most Afghans use water from wells or directly from rivers and canals. Only 32.5% of all used sources contain safe, controlled, and decontaminated water (6). In the whole territory of the country there are only 2.8% of toilets meeting basic hygienic standards. In the majority (more than 60%) of cases cesspools function as lavatories (12). The main contagious and parasitic etiologic factors of diarrheal

diseases are enterotoxic *Escherichia coli*, *Campylobacter*, *Salmonella*, *Shigella*, adeno- and rotaviruses, and also protozoa (*Entamoeba histolytica*, *Giardia intestinalis*). The amebiasis morbidity rate among Afghans is estimated at 3% of the population. The giardiasis morbidity in children reaches 11% (33).

Intestinal helminth worm infections. It is estimated that 90% of the Afghan population are infected by at least one helminth worm (33). Because of ascariasis only, the morbidity including an asymptomatic carrier state is estimated at 60% of the country population. Among other helminthic infections, the most popular ones are ancylostomiasis, strongyloidiasis, trichuriasis and taeniasis (33).

Viral hepatitis type A & E. The diseases occur endemically in all Afghanistan (22). There is a high risk of infection regardless of the season of the year. The morbidity is strictly connected with low hygienic standards and the contamination of food and water with pathogenic microorganisms (30).

Cholera. It is not one of the main gastrointestinal tract infectious diseases in Afghanistan, but it is an extremely dangerous disease because of its severity and epidemicity (34). The last epidemic took place in Kabul in May and June 2005, when 3245 people developed an acute diarrheal disease. A bacteriological screening examination of stool revealed cholera in most cases (35). In the recent years, cholera has been diagnosed in 14 provinces of the country (27).

Respiratory tract diseases

Lower respiratory tract diseases are one of the main causes of the Afghan population morbidity and the mortality of children under 5 (36). The main etiologic factors responsible for lower respiratory tract diseases are *Streptococcus pneumoniae*, *Mycoplasma pneumoniae* and *Influenza virus* (3,17).

Tuberculosis. It is an endemic

disease observed in all Central Asia, and poses a serious epidemiologic problem also in Afghanistan (22). In 1997 the morbidity rate in Afghanistan was estimated at 753 cases/100 thousand inhabitants (among them 35% were infected but asymptomatic) (33). In 2003 this rate decreased to the level of 321 cases/100 thousand people, which still located Afghanistan as one of the first places in the world. Such a high morbidity rate results from two factors. The first one is a small percentage of vaccinated infants (according to WHO, 49% were BCG vaccinated in 2002, and 59% – in 2003). The second factor is coexistent diseases impairing immunity. It is estimated that in Afghanistan 5% of tuberculosis patients are HIV-positive (27,35). Since 1996, the World Health Organization have started promoting a new tuberculosis treatment and control strategy (DOTS – *directly observed treatment short-course*). Although the new strategy has been introduced in 85% in the world, Afghanistan has succeeded to implement it in 15%, and Pakistan in 6% only, which results in the tuberculosis morbidity just in these two countries contributing to the majority of cases in the Middle East and Central Asia (37).

Sexually transmitted diseases

In Afghanistan such sexually transmitted diseases as gonorrhea, chlamydisis and trichomoniasis are quite widespread (15,38). Cases of syphilis and chancroid are also diagnosed. One has to remember that hepatitis B virus is also transmitted by sexual contacts, and cases of hepatitis B infection are often diagnosed in the Afghan population (the prevalence from 10% of population in Kabul to 15-20% in Ghazni in 2002) (39). Surveys conducted in 5 Afghan provinces showed a considerable percentage of illnesses caused by the genitourinary tract inflammations. Among them the venereal etiology was most frequent (38). According to the World Health Organization the number of HIV/AIDS

cases in the Central Asia region, including Afghanistan, has increased recently (15). The incidence increase is noticed among drug addicts who repeatedly use needles and syringes which are not sterile. The Afghan Ministry of Health so far has confirmed 31 cases of HIV/AIDS and 1 case of death caused by AIDS, but unofficially they say about 600-700 cases of HIV infections and AIDS in the country (4).

Enzootic diseases

The highest risk results from rabies, which occurs endemically in Afghanistan (22). Affected dogs are the main source of infection, but so can be wolves, foxes and jackals. It is estimated that in Afghanistan a few hundred people die every year because they have been bitten by rabid dogs (33). In 2001 the World Health Organization estimated that in Kabul only there were noticed as many as 4 cases of rabies daily among bitten people. Nowadays the highest risk of contact with rabid animals is observed in rural areas (3,17).

Another enzootic disease diagnosed in Afghanistan is brucellosis, mainly because of consumption of unpasteurized diary products processed from sick animals (3,17). In the early 1990s anthrax was of high epidemiologic importance (49 cases in 1991) (27,33). The disease was caused mainly by contact with sick animals, consumption of contaminated meat, aspiration of air containing pathogenic microorganisms. Mass preventive vaccinations of farm animals (the main sources of infection in Afghanistan are sheep and goats) reduced the risk. In spite of this, singular cases of the disease among people can be still diagnosed (3,17).

Injuries

Traffic accidents are the most frequent cause of death affecting travelers to Afghanistan. Afghans, just like representatives of other Muslim countries, do not obey nor care to know traffic

regulations. Another problem is the terrible condition of all roads destroyed during wars, and the very poor technical state of most Afghan motor vehicles. All this makes traveling by local means of transport (there are no railroads in Afghanistan) an unforgettable experience on one hand, on the other a serious health threat (1,22).

But the biggest hazard to the health and life of Afghans and that of foreigners visiting the country is trauma inflicted by mines and unexploded ordnance. In Afghanistan, one of the most mined countries in the world, there are still planted approximately 7 million antipersonnel (95%) and antitank (5%) mines (40-42). Except for mines there is a huge number of unexploded ordnance, remainders of bombs, grenades, shells, which were not exploded. It is estimated that mines and unexploded ordnance still cover more than 700 million square meters of the Afghan territory (43). Probably only two provinces are free of these lethal traps. The most mined provinces of Afghanistan are Herat and Kandahar, however any amount of mines and unexploded shells are practically met everywhere, especially near the borders with Pakistan and Iran. Also in the capital city of Kabul, there are a lot of places not cleared of mines (44). It is estimated that most mines and unexploded ordnance are still in pastures (61%), arable fields (26%), near roads (7%), places of residence (4%) and irrigation systems (1%) (44). In the Afghan land there are approximately 50 various types of mines made in the USSR, China, Yugoslavia, Czechoslovakia and many other countries (44). Out of all the countries in the world, Afghanistan has the highest casualty toll from explosions of mines and other shells (45,46). Every month in 1993, the number of Afghans injured and killed by explosions reached (47). In 1997-2002, UNMACA (*United Nations Mine Action Center for Afghanistan*) basing on reports from Afghan hospitals registered 6114 cases of

blast injuries among civilians (48). Nowadays, the number of victims is estimated at over 100 injured or killed every month. However, these are only estimated data because a lot of trauma cases are registered nowhere. In 1999 the percentage of handicapped Afghans was estimated at 3-4% of the country population. Most of them had a limited access to the health service (49). Nowadays the situation looks even worse. There are new casualties of the civil war from the time of the Taliban regime (50). Adults are mainly injured by antipersonnel mines' explosions during travel, moving on terrains which has not been cleared of mines (51). Children are mainly affected by blast injuries which occur during play and pasturage of farm animals (50). Most mines in Afghanistan were planted in the time of the Russian occupation in the 1980s (52). Many areas were covered by mines and unexploded shells during fights between the mujahideen and the Taliban in the 1990s (46). Mines are often planted near objects of economical importance (factories, roads, water sources). Unexploded shells often lie on the ground surface and are easily discernible. They are very interesting mainly for children, which usually ends fatally (44). Explosions of mines and unexploded ordnance cause deaths or injuries, such as limb amputations and multiorgan trauma (53-56). A study carried out in Afghanistan revealed that the mortality rate due to explosions of mines and unexploded ordnance remains at 50-55% (40).

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Резюме

РИСКИ ДЛЯ ЗДОРОВЬЯ В ЦЕНТРАЛЬНОЙ АЗИИ НА ПРИМЕРЕ АФГАНИСТАНА

Кореневский К.

Рассмотрены эпидемиологические, демографические и эколого-гигиенические аспекты жизнедеятельности населения в современном Афганистане. Проанализированы многочисленные статистические данные о состоянии питания и водоснабжения, уровнях и динамике инфекционной заболеваемости. Делается вывод о необходимости вакцинации всех лиц, выезжающих в страны Центральной Азии, против вирусного гепатита А и В, рекомендовано проведение химиопрофилактики малярии, а также правила поведения, снижающие степень опасности для здоровья и жизни.

Резюме

РИЗИКИ ДЛЯ ЗДОРОВ'Я В ЦЕНТРАЛЬНІЙ АЗІЇ НА ПРИКЛАДІ АФГАНІСТАНУ

Кореневський К.

Розглянуті епідеміологічні, демографічні та еколого-гігієнічні аспекти життєдіяльності населення у сучасному Афганістані. Проаналізовані численні статистичні данні щодо стану харчування і водопостачання, рівнях і динаміки інфекційної захворюваності. Робиться висновок щодо необхідності вакцинації всіх осіб, що виїжджають в країни Центральної Азії, проти вірусного гепатиту А і В, рекомендовано проведення хіміопрофілактики малярії, а також правила поведінки для зниження ступеню небезпечності для здоров'я і життя.

Summary

HEALTH HAZARDS IN CENTRAL ASIA ON AFGHANISTAN EXAMPLE

Krzysztof Korzeniewski

The situation of Afghanistan after nearly three decades of war is dramatically bad. A prevailing part of the Afghan population live in extreme poverty. Food supply is scarce, access to uncontaminated drinking water is limited, and there are hardly any sanitary facilities enabling basic hygienic standards. Malnutrition is common. To make the situation even more catastrophic there are frequent disasters, mainly droughts and floods. Most of the country is all the time controlled by drug barons who, having at their disposal their private armies, decide about the existence of local communities.

Those about to leave for Afghanistan are recommended to get vaccinated against viral hepatitis A and B, poliomyelitis, typhoid fever, tetanus and rabies. Antimalarial chemoprophylaxis is also recommended (Doxycycline, Mefloquine or Atovaquone/

proguanil) and so is the usage of repellents against insects (numerous vectors of arthropod-borne diseases) (57,58). Yellow fever does not exist in the territory of Afghanistan, however people coming from the zones of the endemic occurrence of this disease (Equatorial Africa and most countries in South America) have to possess a current international certificate of vaccination against this disease (58). An HIV carrier state test (which is mandatory in some Muslim countries) is not required (1). Travelers to Afghanistan should have health insurance covering hospital treatment and medical transport (1). Unknown terrain, where the local people do not go, must never be entered. Motor vehicles must never leave hard-paved roads, not even to pull over (15,59). If you happen to see an unknown object, you must never pick it up because it can be a booby-trap (during the war Russians used perfidious tricks, such as planting mines mimicking toys, which caused a lot of casualties among Afghan children) (45,60).

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РЕЗУЛЬТАТИ СЕРОЛОГІЧНОГО МОНІТОРИНГУ ІМУНІТЕТУ ДО ПОЛІОВІРУСІВ У ДІТЕЙ НА ЛЬВІВСЬКІЙ ЗАЛІЗНИЦІ

Думський В.П., Щербакова Л.В., Осьмак Н.В.

Санітарно-епідеміологічна станція на Львівській залізниці

Впервые поступила в редакцию 12.07.2007 г. Рекомендована к печати на заседании ученого совета НИИ медицины транспорта (протокол № 5 от 05.10.2007 г.).

В травні 1988 року Всесвітня асамблея охорони здоров'я поставила завдання добитися глобальної ліквідації поліомієліту до 2000 року. Цю ініціативу підтримали всі країни – члени ВООЗ, в тому числі і Україна. Для вирішення поставленого завдання необхідно було, насамперед, створення і тривалого підтримання на високому рівні протиполіовірусного імунітету.

З 1989 року і по даний час на Львівській залізниці проводиться робота по вивченню напруженості імунітету у

дітей до вірусів поліомієліту. Метою було вивчення стану імунітету у дітей, що отримали повний вакцинальний комплекс і не менше однієї ревакцинації.

Матеріали і методи

Враховуючи те, що територія Львівської залізниці проходить по семи областях Західної України дані дослідження охопили не тільки дітей ст. Львів, а також ближні і віддалені дільниці обслуговування. В процесі моніторингу досліджувались проби від дітей організованих дитячих колективів і неорганізованих