

A STUDY OF DISEASES IN THE DEVELOPING WORLD

Abstract- In the developing world, the leading infectious causes of death are respiratory tract infectious diarrheal diseases, tuberculosis, malaria, and aids which together represent >90% of deaths.

The remaining 10% are due to tropical diseases and various other infections. Tropical diseases have a specific presentation and epidemiology in elderly patients. Infectious diseases with a world wide distribution impact elderly patients in the developing world in a specific manner, which is most obvious with respect to human immunodeficiency virus and tuberculosis but is also true with respect to trivial manifestations of infection, such as diarrhea and pneumonia. Malnutrition contributes in a major way to the immunodeficiency of elderly patients in the developing world. Poorly controlled use of antimicrobial drugs leads to multidrug resistant microorganisms which together with the limited resources available for drug treatment makes appropriate treatment of infections in elderly patients will have an increasing impact on the public health and economy of developing countries.

INTRODUCTION- In the developing world infections in elderly patients are a major medical problem. After a period of neglect, this problem is now receiving the deserved attention of the medical community. In Developing countries different types of pathogens are encountered poverty and malnutrition lead to amplified severity of commonly encountered infections, transmission of pathogens is increased as a result of deficient infrastructure (eg-water supply, sewage system, and hospital hygiene) and there is a lack of resources to treat the specific medical needs of elderly patients. Thus, the problems associated with infections in elderly patients and their impact on the medical and socioeconomic systems in developing countries need a specific assessment. In this study we address the following questions- (A) are there specific manifestations of tropical infectious diseases in elderly patients (B) what is the impact of malnutrition and dietary changes. (c) what is the impact of ubiquitous infectious diseases such as tuberculosis. Aids and pneumonia on the elderly population. (D) lastly what is the impact of these elements on society in developing countries

DISEASES WHICH IS COMMON IN DEVELOPING COUNTRIES

Infectious diseases of major relevance- About three quarters of all deaths in developing countries could be due to age associated diseases. There are predominantly non communicable diseases such as cardiovascular diseases cancer and diabetes. Role of infection in the death of elderly includes, statistics from the WHO suggest that in Europe and the United States .5% of the population >60 year old will die as a consequence of infection compared with 20% different in the importance of infection as a cause of death in industrialized countries versus developing countries is certainly relevant, the absolute numbers should be regarded with caution. In the developing world the leading infectious causes of death are respiratory tract infections diarrheal diseases, tuberculosis, malaria and AIDS, which together represent 90% of deaths. The remaining 10% are due to tropical

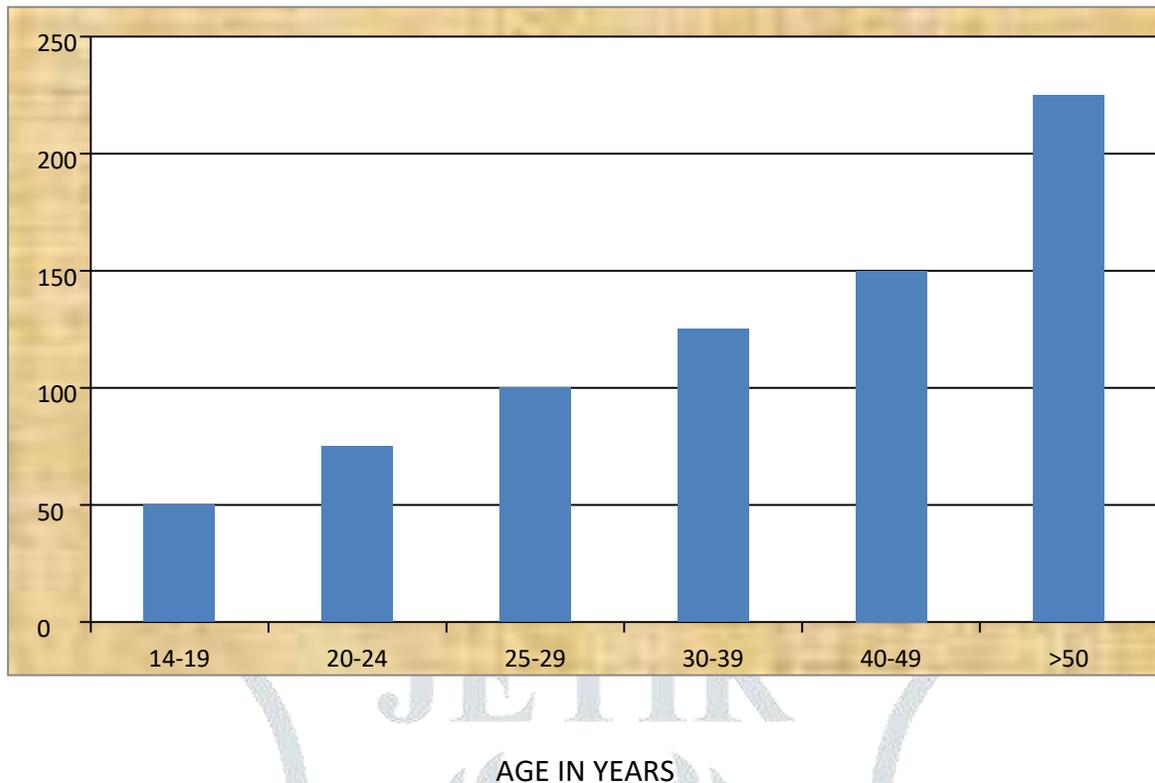
disease and various other infectious in industrialized countries respiratory tract infections, blood stream infections, urinary tract infections and infections of the digestive system represent 90% of infections related deaths, other disease such as tuberculosis, hepatitis B and C, diarrhoeal disease and AIDS represent nearly all of the remaining 10%.

Malaria-Malaria is a major cause of morbidity and mortality in developing countries. Higher parasite loads and a higher proportion of severe forms (example cerebral complications, more frequent fetal outcome) have been reported to be associated with malaria among elderly individuals without immunity as compared with the younger adult population. The situation in areas of endemicity is more complex, because of the development of immunity the incidence of fatal diseases decreases with age. It occurs most commonly in children <5 years old in less free-out among adolescent individuals and is relatively among adults.

LEISHMANIASIS-similar to other parasitic infections visceral leishmaniasis (also known as kala-azar) is a re-emerging disease. The annual estimates for the world wide incidence and prevalence of this disease are 0.5 million and 2.5 million respectively. Kala-azar is clustered in eastern Africa, northeastern India and South America where it accounts for 1 of every 1000 deaths due to infectious disease. These relative numbers are the same for both young and old adults. Thus, presently kala-azar is not a problem that is particularly prevalent in the elderly population.

AIDS-the number of elderly patients with HIV infection is increasing throughout the world. In industrialized countries HIV infected individuals aged >50 years account for 10-15% of HIV infected individuals, but seroprevalence in this age group remains relatively low (~0.1%, M. Gebhard [federal public health office, Bern, Switzerland] and M. Rickenbach [university hospital, Lausanne, Switzerland], personal communication). In developing countries, elderly individuals represent a smaller fraction of HIV-infected individuals (4.5%, 5.6% and 7.6% in Asia, Africa, and Latin America respectively) but HIV type 1 seroprevalence is often much higher. For example, 2.5% of the elderly population in rural villages of Cameroon and 15% of the elderly population in Dar es Salaam (the capital of Tanzania) have been reported to be HIV positive. In some developing countries, HIV infection is now one of the main causes of hospitalization for people >55 years of age.

DEATHS PER THOUSAND POPULATION PER YEAR



The HIV pandemic not only affects the elderly population through direct infection with the virus, but it also has a major indirect impact. HIV increases the spread of pathogens in community and hospital settings. Given their decreased host defense elderly individuals are likely to be plagued by this secondary wave of infections. Such an HIV-induced increase in pathogen transmission has been documented for tuberculosis, but may also apply to malaria, pneumonia and other infections.

TUBERCULOSIS-IN developing countries tuberculosis is much more common than in industrialized countries. Although, in industrialized countries, annual incidence rates of tuberculosis show a slight decrease both in younger adults (age 25-64 years) and in elderly individuals (age >65 years) in developing countries, the incidence of tuberculosis is still increasing and at least in some countries this increase affects the elderly population preferentially (increases are 30%-300% greater than in the younger population). As in industrialized countries the presentation of tuberculosis in the elderly population of developing countries is a typical, with more disseminated disease and more frequent lower lobe involvement in the case of pulmonary tuberculosis. The time periods from the onset of symptoms to the establishment of diagnosis are longer and outcomes are worse than they are in the younger population. In general antituberculosis treatment in elderly populations is efficient and safe but drug induced hepatitis and interactions with other drugs may be relevant problems. In most developing countries, antituberculosis drugs which are relatively cheap can be obtained. Instrumental to the distribution of drugs (but also instrumental to increasing compliance and avoiding resistance) is directly observed therapy strategy. However, the difficulties faced by the elderly population in obtaining access to health care (eg-limited financial sources, functional disabilities, and remote living areas) may lead to an exclusion from treatment, a situation that has already been documented in India. In Taiwan, rates of drug resistances have been found in the elderly population that are higher than those in the general population.

DIARRHEA-Infected diarrhoea is one of the main causes of morbidity and mortality in developing countries. Causative microorganisms are numerous and include bacteria (eg-vibrio cholerae and shigella, salmonella and campylobacter species), viruses (eg-noroviruses and rotavirus) and protozoa (eg-noroviruses and rotavirus) and protozoa (eg-giardia and cryptosporidium species). The varying levels of prevalence reflect the level of hygiene and sanitation

in the respective areas, and an increasing number of studies report diarrhea as a health problem in the elderly population in developing countries. The World Health Report 2002 cites diarrhea as the second or third most important cause of death due to infection among individuals >60 years of age in developing countries. Thus, although often considered to be trivial, infections diarrhea in elderly patients is a very important health problem in the developing world.

INFLUENZA-Because of the lack of efficient surveillance programs in developing countries, it is difficult to assess the real impact of influenza in elderly patients. However, studies of several outbreaks in Taiwan and South Africa show that influenza is associated with greater morbidity and mortality in elderly patients than in the general population and studies from Argentina, Brazil and China demonstrate the efficacy of vaccination in the elderly population with respect to the prevention of both influenza like illness and pneumonia.

COMMON INFECTIONS IN THE ELDERLY POPULATION-In

industrialized countries pneumonia, urinary tract infections and skin and soft tissue infections are the most relevant infections in elderly patients. In developing countries the incidence of these infections is comparably high. Thus, tropical infections do not replace common infections in the developing world but are superimposed on the infectious problems that are seen in elderly individuals in the industrialized world. In developing countries, pneumonia is one of the leading causes of death in elderly patients (those >60 years of age). In South Africa, invasive pneumococcal disease is 3 fold higher in the elderly population than in the younger population and the mortality rate is higher as well. The prevalence of meningitis is high among elderly Senegalese compared with the general adult population of Senegal. Meningitis is the fourth most common infections pathology requiring hospitalization and is also associated with poor outcome. The limited data available on nosocomial infections in developing countries suggest that as in industrialized countries elderly patients in developing countries are more likely to acquire infections during hospitalization. The deficiency of hospital infection control practices enhances the magnitude of the problem in the developing world.

EMERGING INFECTIOUS DISEASES-Emerging infectious diseases are mostly thought of in the context of the younger population. However, this picture is incomplete and numerous emerging infections may be associated with a higher prevalence and a distinct clinical presentation in the elderly population. For example, during an outbreak of West Nile virus infection in New York City, 73% of individuals with clinically apparent disease were >60 years of age, and the relative risk for individuals >80 years of age to acquire the disease was 50 times greater than that for young adults. During a West Nile virus infection outbreak in

Israel, 64% of hospitalized patients were >64 years old and all patients with fatal cases were >77 years old. A study of dengue fever in Puerto Rico showed that infected individuals >64 years old had a greater risk for hospitalization and death but of interest a decreased risk for Haemorrhage.

NUTRITION AND INFECTION IN OLDER ADULTS-The

Immunodeficiency of elderly individuals is often attributed to immunosenescence and is thus considered irreversible. However, malnutrition (energy, protein and micronutrient deficiency) which is found in 5%-10% of community dwelling elderly individuals but is also found in 30%-60% hospitalized elderly patients in industrialized countries is probably at least as important factor as is the aging of the immune system. In developing countries, malnutrition in elderly individuals is more common for example - In Africa >50% of elderly household are in food poverty, 9.5%-46.8% of the community dwelling elderly population > 60 years have a low body mass index. Paradoxically malnutrition increasingly coexists with obesity in the developing world. This in turn, will increase the risk of infection in elderly individuals, because obesity leads to chronic diseases such as diabetes mellitus and diverticulosis, which bring an increased risk of infection and because qualitative malnutrition enhances the immunodeficiency of elderly individuals.

ANTIMICROBIAL DRUGS AND MICROBIAL RESISTANCE-

Numerous studies from developing countries show increasing rates of bacterial resistance. Resistant microorganisms relevant for community and hospital acquired infections include neisseria meningitidis, salmonella species, streptococcus pneumoniae, m. tuberculosis, methicillin resistant staphylococcus aureus, escherichia coli, and

p. falciparum. The impact of this resistance development on the elderly population is now increasingly studied. As an example c. bantar (committee for prevention and control of nosocomial infections, hospital sanmartin, parana, entrerios, argentina) provided us with unpublished data on argentinean outpatient presenting with urinary tract infection. There is no simple solution for the problems related to infectious disease in the aging population of developing countries. Infection control programs have been implemented with some degree of success, but they usually do not consider specifics with respect to the elderly population and they invariably lack long term impact if they are not accompanied by broader socioeconomic measures. Targets for such broader measures include hygiene, water and food sanitation, veterinary surveillance, control of drug sales (i.e. the number of prescriptions and the quality of the drugs) and many other factors.

PERSPECTIVE-In developing countries the aging of the population structure will be faster than that which occurred during the previous century in industrialized countries. Such a rapidly aging population in countries with limited financial resources will raise a multitude of problems, health problems and in particular those associated with infectious disease are only one element of this complex situation. But as was sadly demonstrated by the AIDS epidemic more problems can overwhelm and destroy other aspects of society. We would however like to emphasize that the aging of the population in developing countries should not be viewed as a curse. On the contrary the increasing population of elderly individuals represents a formidable chance for the preservation and transmission of knowledge and competence to younger generations. In 1962 the Malian writer "Amadou Hampate Ba" said a sentence that has become a famous quote: "when an old man dies a library burns down". Today elderly individuals are probably saving the society in AIDS ridden sub-Saharan Africa. Thus taking care of the needs of elderly individuals in developing countries is not simply a gesture of charity but is rather an imperative for survival and development.

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