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World experience of cervical cancer screening. A review article.

Annotations. Cervical cancer is the fourth most common cancer in women, and the seventh overall, with an estimated 528,000 new cases in 2012 according to Globocan. A large majority (around 85%) of the global burden occurs in the developing countries, where one-third of all women detected in the advanced stage of the disease. World statistics of morbidity and mortality, which we have now, was not always such. Cervical cancer is the disease that can be prevented. At the present, there is screening program for early detection of cervical cancer. The program in the developing countries is based on cytology for selected groups in most cases in developed countries. PAP smear is accompanied by a DNA test for high-risk HPV. Doctors also use methods of visual assessment (VIA) of the cervix with acetic acid in countries with limited resources. There is a whole history of the formation of screening that we have today. It analyses the growing medical interest in the disease at the beginning of the twentieth century, the development of prevention techniques, and the emergence of screening programs in the 1960s and development of a Cervical Cancer screening in Kazakhstan.

Key words: cervical cancer, screening y=Human papilloma virus.

Cervical cancer refers to socially significant problems of today's world and is one of the leading causes of death of women in the active age in developing countries. Cervical cancer is the fourth most common cancer among women, and the seventh overall, with estimated 528,000 new cases in 2012 according to Globocan. A large majority (around 85%) of the global burden occurs in the developing countries, where one-third of all women detected in the advanced stage of the disease. The regions with the highest rates of cervical cancer, where the discovery of more than 30 cases per 100,000 population are Eastern Africa (42.7), South Africa (31.5) and Latin America (20.0). And the regions with the lowest incidence are North America (10.2), Western Europe (8.0), Australia (5.5), New Zealand (5.5), West Asia (4.4). There were estimated 266,000 deaths from cervical cancer worldwide in 2012, accounting for 7.5% of all female cancer deaths. Almost nine out of ten (87%) cervical cancer deaths occur in the less developed regions. Mortality varies 18-fold between the different regions of the world, with rates ranging from less than 2 per 100,000 in Western Asia, Western Europe and Australia/New Zealand to more than 20 per 100,000 Middle (22.2) and Eastern (27.6) Africa.

World statistics of morbidity and mortality, which we have now, was not always such. This pattern is relatively recent, however; before the introduction of screening programmes in the 1960s and 1970s, the incidence in most of Europe, North America and Japan was similar to that seen in many developing countries today: for example, it was 38.0 per 100 000 in the Second National Cancer Survey of the USA, 37.8 per 100 000 in Hamburg, Germany, in 1960–62, 28.3 per 100 000 in Denmark in 1953–57 and 22.1 per 100 000 in Miyagi, Japan, in 1959–60 [1,2,3]. Indicators of current statistics are

the result of good work of screening program.

Cervical cancer is the disease that can be prevented. At the present, there is screening program for early detection of cervical cancer. The program in the developing countries is based on cytology for selected groups in most cases in developed countries. PAP smear is accompanied by a DNA test for high-risk HPV. Meta-analyses and systematic reviews conducted by the US Agency for HealthCare Policy and Research, have shown that the conventional PAP smear has a sensitivity of 51% and a specificity of 98% in detecting precancerous pathology [4].

Researchers have studied the using of VIA - visual assessment using acetic acid with limited resources. This method is proven to be a simple and cheap, cost-effective method for detecting in less developed countries. Studies, including colposcopy and biopsy, in addition to the VIA determined that the sensitivity of VIA nearly equivalent as using cytological screening [5].

There is a whole history of the formation of screening that we have today. Screening was defined by the United States Commission on Chronic Illness (1957) as "the presumptive identification of unrecognized disease or defect by the application of tests, examinations or other procedures that can be applied rapidly". In the 20s of the last century, European and American scientists started work on the control of cervical cancer. In 1924 German gynecologist Hans Hinselmann created binocular magnifier to inspect the cervix - a colposcope. In 1933, an Australian gynecologist Walter Schiller opened the use of iodine solution (or Lugol) to detect cervical lesions. These research methods used extensively in Germany, Austria and Switzerland in the 30s of XX century. It remains a popular combination of colposcopy and Schiller to this day, which in our country began to be used in the last decade of the twentieth century.

In 1941 George Papanicolaou in collaboration with pathologist Herbert Traut published the first work which describing the technique of staining smears of the cervix, which was a turning point in the history of the development of cytological screening was thrown forward and scientists in the study of cervical cancer [6]. Combining methods such as colposcopy, Schiller and PAP smear Gynecological Society are recognized as non-invasive and inexpensive methods for the detection of cervical cancer. Later it became the starting point for a screening program to identify cervical cancer in European countries and in America. The first national screening program was introduced in the 1960s in the United States. Pan American Health Organization (PAHO) described this as a serious illness, but controlled health issue, in which the main solution is the introduction of screening. Until 1980, the PAP smear was introduced as part of the regular review, but women explores ages has not been defined and that was corrected in 1980.

In the 60s of the twentieth century there was a view

that the development of cervical cancer is closely related to an active sex life. At the same time, it was developing of the theory of viral origin of the disease. In 1968, there was a suggestion that cervical cancer is caused by the Herpes Simplex Virus, this hypothesis existed until 1980, despite the failure to demonstrate the viral DNA into the tissue of the tumor [7,8]. More recently, the finding that koilocytes in tumor tissue were identical to the affected tissue warts, contributed to the discovery of the main etiological factor for cervical cancer - human papilloma virus. Also contributed to this development as the science of virology. With virological methods have been identified different types of HPV. In 1980 Professor Harald zur Hausen was made a great discovery on 16 and 18 HPV types as a high-risk oncogenic by double hybrid capture and PCR that the researcher brought the Nobel Prize in 2008 [9,10]. It were laid in the beginning of the organization of primary prevention of cervical cancer after to this discovery, that is, the creation of vaccines against human papilloma virus high oncogenic risk.

In the USSR the first cytology smears were conducted by Professor S.I. Serebrov in 1953. Cytological laboratory began to function since 1960 in Moscow and Leningrad. Cabinet of preventive examination started in 1964, but it was not successful organization of this program. Since 1977, the Soviet Union began forming centralized cytology laboratories, with the inclusion of cytological screening in the annual mass preventive examinations in antenatal clinics and examination rooms, but with a predominant using of cytological smears by Romanovskogo- Giemsa. Unfortunately, there was not created the correct organization of the program, which showed lack of effectiveness, as there was no adequate full coverage.

Since 1991, after the political and economic changes and of a new independence Kazakhstan, the number of routine inspections and their effectiveness has declined substantially. In Kazakhstan, cervical cancer among the female population ranks second place after the breast cancer. The cancer of the cervix in Kazakhstan every day takes two women in the active age, causing enormous damage to the country.

Our country began to carry out routine inspection in the women's offices since 2005. In 2008, an order was issued by the Ministry of Health of Kazakhstan № 607 "On improvement of routine inspections of certain categories of adult population" in 2009 issued an order №685 «On approval of Rules of carrying out preventive medical examinations of the target population" which amended from 29.12.2014. And since 2008 there is a national screening program for cervical cancer using the Pap test with the evaluation of the classification of Bethesda System [11]. Research is carried out for women from 30 to 60 years with an interval of 5 years. Implementation of this program started in stages, beginning with the training of experts, the organization of women's rooms, equipment rooms colposcopy counseling women [12]. Since 2011, started to be introduced an active liquid-based cytology, which has a several advantages relative to the traditional method. This method of research is a quick and easy method of obtaining a sample also has a greater sensitivity to pathology. Today completed the first round of cervical screening and examined more than 3 million women.

At the moment, the Kazakh Research Institute of Oncology and Radiology and the Department of medical care of Ministry of Health and Social Development are actively working to improve the quality of screening, developed quality standards, conducted organizational and methodical work, national guidelines and instructions for the organization of screening programs are being developed. Also performs primary prevention of cervical cancer, vaccination of teenage girls aged 11-13 years in 4 regions of Kazakhstan. In the future, we expect the expansion of the target groups for cervical cancer screening and a full coverage of vaccination against high risk human papillomavirus.

Cervical cancer screening is an essential part of the national screening program, which is one of the leading health strategies in Kazakhstan which included in program development issues of Health and is financed by the republican budget.

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