PROSTATE CANCER: EPIDEMIOLOGY, RISK FACTORS, DIAGNOSIS

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Abstract. *Prostate cancer is a major cause of disease and mortality among men, and each year 1.5 million men are diagnosed with and 400,000 men die of prostate cancer. The reasons for the increase of this disease are not known, but increasing life expectancy and modified diagnostic techniques have been suggested as causes. The established risk factors for this disease are advancing age, race, positive family history of prostate cancer and western diet (use of fat items). Several other risk factors, such as obesity, physical activity, sexual activity, smoking and occupation have been also associated with prostate cancer risk, but their roles in prostate cancer etiology remain uncertain. We provide descriptive epidemiology statistics and patterns for prostate cancer incidence and mortality around the world. This includes discussion of the impact of prostate-specific antigen screening on prostate cancer epidemiology. This mini-review aims to provide risk factors, disease knowledge, prevalence and awareness about prostate cancer.*

Keywords: *Prostate cancer - risk factors – epidemiology*

РАК ПРОСТАТЫ: ЭПИДЕМИОЛОГИЯ, ФАКТОРЫ РИСКА, ДИАГНОСТИКА

Аннотация. *Рак предстательной железы является одной из основных причин заболеваемости и смертности среди мужчин, и каждый год у 1,5 миллиона мужчин диагностируется рак предстательной железы, а 400 000 мужчин умирают от него. Причины роста этого заболевания неизвестны, но в качестве причин предлагаются увеличение продолжительности жизни и модифицированные методы диагностики. Установленными факторами риска этого заболевания являются пожилой возраст, раса, положительный семейный анамнез рака предстательной железы и западная диета (употребление жирных продуктов). Несколько других факторов риска, таких как ожирение, физическая активность, сексуальная активность, курение и профессия, также связаны с риском рака предстательной железы, но их роль в этиологии рака предстательной железы остается неопределенной. Мы предоставляем описательную эпидемиологическую статистику и закономерности заболеваемости и смертности от рака предстательной железы во всем мире. Это включает обсуждение влияния скрининга на простатический специфический антиген на эпидемиологию рака предстательной железы. Цель этого мини-обзора – предоставить факторы риска, знания о заболевании, распространенности и осведомленности о раке простаты.*

Ключевые слова: *Рак простаты - факторы риска – эпидемиология*

Introduction:

Prostate cancer is the fourth leading cancer in both sexes and the second most common cancer in males. It was estimated that about 1.5 million men worldwide of prostate cancer will be diagnosed in 2020, which is 20% of the malignances diagnosed in men and the estimated number of deaths will be almost 400,000. Prostate cancer is the second most common cancer among Asian people. It is estimated that about 250,000 new cases of prostate cancer will be diagnosed in the Asia in 2020 that is 30% of all the malignances among males and the estimated number of deaths will be almost 35,000. A man's life time risk of developing prostate cancer is one out of seven. The global burden of prostate cancer is expected to raise 1.8 million new cases and 500,000 deaths by 2030 due to growth and aging of the worldwide population.

Risk Factors Age and ethnicity

Prostate cancer is a disease of elderly men. Almost 6 cases in 10 are diagnosed at the age of 60 years or later. It is rare before the age of 40, but the chance of developing prostate cancer rises rapidly after the age of 50. The average age at the time of diagnosed is almost 60 years in the Asia 2020. From 2010- 2018, approximately 1% of prostate cancer cases were diagnosed between 34 and 43; 10% between 44 and 53; 35% between 54 and 63; 37.4% between 64 and 73; 17.5% between74 and 83; and 4% for 84 years of age or more.

Family history of prostate cancer

Several studies have consistently indicated familial aggregation of prostate cancer risk, showing 2 to 3 fold increased risk of prostate cancer among male persons who have a first-degree relative (father, son, brother) with a positive history of prostate cancer. Found in their study that men whose fathers or brothers were patient of prostate cancer had 3 times higher risk of developing this disease as compared to without family history.

Obesity

Obesity is measured by body mass index BMI. It is calculated on the basis of weight in kg divided by the square of height in meters, (kg/m2). A person is considered to be obese if its BMI is greater than or equal to 25. Although the findings on obesity are mixed, but recent studies suggest that obesity is consistently related to aggressive prostate cancer. The risk of prostate cancer was almost 2 times higher in case of obese men.

Sexual behavior and Sexually transmitted diseases

Numerous case-control studies reported a positive association between prostate cancer risk and history of sexually transmitted diseases (gonorrhea and syphilis). On the other hand many prospective studies have not shown any significant association between history of gonorrhea or syphilis and prostate cancer (Huang et al., 2008; Sutcliffe et al., 2006). In different studies, the frequency of sexual activity has been found to have direct relationship with the

development of prostate cancer. A meta-analysis conducted by scientist concluded from 12 retrospective studies that increased sexual frequency (three times per week) may be associated with an increased risk of prostate cancer.

Smoking

The effects of smoking on the epidemiology of prostate cancer are inconclusive. Generally smoking has not been considered a risk factor for prostate cancer. Though, a meta-analysis of 24 cohort studies reported a significant increase in prostate cancer risk for heavy smokers. Current and past smokers had higher risk for prostate cancer, but the association was statistically significant only in case of past smokers. Furthermore, smoking is positively associated with prostate cancer mortality. Smokers have 20% more risk of dying from prostate cancer as compared to nonsmokers. Smoking may stimulate the development of more aggressive, hormone-sensitive cancers through several mechanisms, comprising effects on sex steroid hormone levels and continuous exposure to carcinogens for example polycyclic aromatic hydrocarbons contained in cigarette smoke.

Screening and diagnosis

Annual prostate-specific antigen (PSA) and digital rectal examination (DRE) screening starting at the age of 45 years for all men with a life expectancy of ≥10 years. 43 Men at high risk, including Asian people and those with a first-degree relative affected by prostate cancer, should be screened starting at age 40, and those with multiple first-degree relatives should be tested starting at age 35. A similar screening algorithm is recommended by the PSA screening detects more tumors than DRE, and it detects them at an earlier stage. In the current era of widespread PSA testing, approximately 85% of all prostate cancer cases are detected as a result of abnormal PSA findings. Importantly, the proportion of cases presenting with lymph node involvement or advanced disease has decreased considerably because of PSA screening.

Conclusion

Prostate cancer is characterized by wide variations in incidence and mortality in the world, combined with evidence of an increasing load of incidence in several areas. Epidemiologic observations provide vital clues to the etiology of prostate cancer. No doubt, the causes of prostate cancer are not still clear but epidemiologic studies have brought out various intriguing leads, including environmental as well as genetic factors. With the help of freshly available tools in molecular biology and genomics, investigation of the individual as well as combined effects of these factors have been started by a new generation of large-scale population-based studies. These studies may provide tangible evidence for risk factors which may be helpful in identifying subsets of the population which are more capable of getting prostate cancer. The advent of widespread PSA testing has led to the diagnosis of earlier-stage

disease as well as the diagnosis of younger men. Nevertheless, the histologic grade has not shifted, with most patients still being diagnosed with moderately or poorly differentiated tumors. The impact of widespread PSA testing on mortality rates remains unclear.

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