PROSTRATE CANCER: ASSESSING THE FATALITY, PREVENTION AND TREATMENT IN THE 21ST CENTURY

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Abstract

With its high potential for death, prostate cancer continues to be one of the most common cancers in men globally and presents serious public health concerns. Technological and scientific developments in medicine have illuminated the intricate features of prostate cancer, its risk factors, and the vital significance of early identification in the twenty-first century. Despite the increasing prevalence, people are becoming more aware of the risk-reducing and outcome-improving preventative approaches, such as lifestyle changes and screening procedures. This essay examines the complex issues surrounding prostate cancer, highlighting the need of routine tests and the crucial role that education plays in preventative measures. In addition, it looks at modern treatment techniques including radiation, hormone therapy, and surgery, emphasizing the necessity for individualized treatment strategies based on patient profiles and their efficacy. Prostate cancer is a serious health problem, and treating it quickly is necessary given the interaction between death rates, improvements in treatment methods, and the need of preventive care. By providing patients and healthcare professionals with the knowledge they need to navigate the complexity of prostate cancer in the quickly changing medical field of today, this thorough review hopes to promote better preventive and treatment practices.

Keywords: Prostrate cancer, fatality, prevention, treatment, 21st Century.

Introduction

Prostate cancer is a significant public health concern, ranking as the second most common cancer and the fifth leading cause of cancer-related deaths among men globally (Bray et al., 2018). The molecular complexity of prostate cancer and the range of possible therapeutic responses make it a challenging illness that raises the risk of mortality. The prevalence of prostate cancer is expected to rise with global population ageing, necessitating prompt attention to effective prevention and treatment strategies. The molecular complexity of prostate cancer and the range of possible therapeutic responses make it a challenging illness that raises the risk of mortality. The prevalence of prostate cancer is expected to rise with global population ageing, necessitating prompt attention to effective prevention and treatment strategies.

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The 21st century has seen improvements in our understanding of the causes, risk factors, and stages of prostate cancer due to medical research developments.

Factors such as age, family history, and ethnicity have been identified as significant contributors to prostate cancer risk, with African American men facing the highest incidence rates (DeSantis et al., 2019). This demographic disparity emphasizes the need for targeted prevention treatments that address the unique threats that each group encounters.

Preventive measures like early screening, education campaigns, and lifestyle modifications can lower the death rate from prostate cancer. The American Urological Association recommends shared decision-making regarding prostate-specific antigen (PSA) testing, which has been shown to facilitate early detection and improve survival outcomes (Mottet et al., 2020).

Treatment options for prostate cancer have undergone a significant shift as these treatment options often include hormone medication, radiation therapy, surgery, and active monitoring, depending on the patient's particular health profile and stage of sickness. Furthermore, exciting new possibilities for more effective therapies that could improve the prognoses of many patients are presented by the development of more potent therapeutic agents and precision medicine. In an attempt to lower the prostate cancer death rate, this study highlights how critical it is to focus on both therapy and prevention. By combining state-of-the-art research with public health initiatives, we may better educate patients and healthcare providers to manage the intricacies of prostate cancer in the twenty-first century, thereby reducing the disease's burden on society.

Concept of Cancer

Cancer is a broad category of disorders that can originate in nearly any organ or tissue in the body when aberrant cells proliferate out of control, cross normal boundaries to infect other body parts, or spread to other organs. The latter phase, known as metastasizing, is a primary contributor to cancer-related deaths. Other frequent terms for cancer include neoplasm and malignant tumour. The World Health Organization (WHO) reports that cancer is the second most common cause of death worldwide, with an anticipated 9.6 million fatalities, or one in six deaths, in 2018. Men are most likely to get lung, prostate, colorectal, stomach, and liver cancers, whereas women are more likely to develop breast, colorectal, lung, cervical, and thyroid cancers.

Cancer is a disorder when some body cells proliferate out of control and invade other bodily areas. It is a new growth of tissue which apparently originates and grows spontaneously, possesses an atypical architecture, does not subserve the uses of the organism, and reaches no definite termination of growth (Brown et al, 2023). Cancer is also a hereditary disease that produces aberrant cells that proliferate and divide until they finally interfere with normal bodily functions. It starts when a cell decides to multiply according to its own schedule after escaping the typical constraints on cell division. This original, ancestral cell divides into all of its offspring, and all of those cells exhibit improper proliferation. These aberrant cells can become tumours, or masses of cells, which can either stay inside the tissue from which they originated (a condition known as in situ cancer) or start to invade neighboring tissues (a disease known as invasive cancer).

Age is a significant contributing factor to the development of cancer, as the disease is primarily associated with the old. Nevertheless, the illness may strike anyone at any age, including very young children. In many developed countries cancer deaths in children are second only to accidental deaths (Costa, 2024). Cancer is not exclusive to humans; it may also strike animals and other living things. However, a cell generally dies when it is injured or changed and its system is not repaired. Uncontrolled division and expansion lead to the development of a mass of cancer cells when injured or unrepaired as these cells do not die and turn into cancerous cells. Cancer cells often have the ability to separate from this initial cell mass, pass through the lymphatic and circulatory systems, and settle in other organs where they can restart the unchecked growth cycle. This process of cancer cells leaving an area and growing in another body area is termed metastatic spread or metastasis (Davis, 2023).

Concept of Prostate Cancer

In males and those who are designated male at birth, prostate cancer originates in the prostate gland, which is a component of the reproductive system. When cancer cells are restricted to the prostate or even slightly outside of it (extra-prostatic extension), they remain "localized" and do not spread to other areas of the body. Prostate cancer is referred described as "advanced" if it spreads to other bodily areas. The majority of instances of prostate cancer, the most prevalent solid cancer in males, are discovered through screening. It is predominately a disease of older men and the burden of disease is expected to increase with an aging population (Sedhom & Gupta, 2020). It is important to distinguish this form of cancer from benign prostate hyperplasia, which is not the same as cancer but presents with similar symptoms and is common in older men.

When a prostate gland develops cancer, pressure from the tumour may press against the urethra, leading to painful or frequent urination, occasionally with a burning feeling. In addition, weak, sporadic urine flow, difficulty urinating, and blood in the urine can all result from such pressure. Impotence or sexual dysfunction may result from the malignant growth's strain on the erection-related nerves. Prostate cancer can manifests as enlarged lymph nodes in the groin and discomfort in the back, pelvis, hips, or ribs.

Prostate cancer has significant variability in its pathophysiology and clinical manifestations as they are difficult to identify and treat because they can take decades to advance to clinically severe illness. While being the second highest cause of cancer-related deaths in males in Western countries, the beginning, development, and spread of cancer are all associated with mutations in certain genes. However, ablative radiation treatment, radical prostatectomy, and active surveillance are all used to treat localized prostate cancer. Currently, available treatment options are more effective when used as combination therapy; however, despite available treatment options, prostate cancer remains to be incurable (Sakhoacha et al, 2022).

Types of Prostate Cancer

Prostate cancers come in a variety of forms or types and a few of these forms are as follows:

- Prostatic Adenocarcinoma

Prostatic adenocarcinoma is by far the most prevalent type of prostate cancer, accounting for up to 99 percent of cases; it is the only cancer of its kind. It develops in the gland cells that make prostate fluid (Markman, 2022). Adenocarcinomas may develop practically wherever in the body. They develop in the glandular epithelial cells that surround the organs and release fluids such as mucus or digestive juices. Adenocarcinoma is another name for glandular prostate cancer. However, prostate adenocarcinoma symptoms might include blood in the semen, painful ejaculation and urination, and frequent urges to pee. Nonetheless, there are two categories for prostatic adenocarcinomas, specifically:

Acinar Adenocarcinoma (conventional adenocarcinoma): Almost all cases of prostatic adenocarcinomas are caused by this malignancy. The cancer may be felt during a doctor's digital rectal exam. It begins to grow in the prostate's back, or its perimeter, close to the rectum. PSA levels are raised by the illness.

Prostatic Ductal Adenocarcinoma (PDA): This kind of cancer is an aggressive but less common form of adenocarcinoma. It starts in the cells that line the prostate glands ducts and tubes. When it does occur, acinar adenocarcinoma often coexists with its development. It is more difficult to diagnose this kind of cancer since PSA levels are not always elevated.

- Small Cell Carcinoma (Small Cell Neuroendocrine Carcinoma):

Less than 1% of prostate cancer diagnoses are related to small cell carcinoma. The neuroendocrine cells of the prostate are the source of it; they release hormones in response to signals from the neurological system. Therapy-related Adenocarcinoma, especially therapy with ADT medications like Abiraterone, may also lead to the development of small cell carcinoma of the prostate. This particular kind of cancer nearly usually has the gene RB1, which produces a protein that aids in stopping tumour growth, "turned off." TP53 is another tumor-suppressing gene that is frequently switched off. The growth and dissemination of cancer cells are facilitated by this. Roughly 50% of individuals with small cell carcinoma are also identified as having adenocarcinoma.

- Neuroendocrine Tumors (including large cell carcinoma)

Three subtypes of neuroendocrine prostate cancer (NEPC) exist: adenocarcinoma with neuroendocrine differentiation, big cell neuroendocrine carcinoma, and small cell carcinoma. NEPC is an uncommon form of prostate cancer. Even though certain neuroendocrine tumours and adenocarcinomas share characteristics, it is possible to differentiate between the two by utilizing specific neuroendocrine markers, gene expressions, and the lack of PSA secretions (blood PSA levels are usually increased in adenocarcinoma patients). Since neuroendocrine prostate cancer grows swiftly and spreads quickly to other organs, it is regarded as an aggressive form of the disease. Prostate cancer deaths have been greatly increased by treatment-related neuroendocrine cancer, whose response to chemotherapy treatment is typically short-lived. To develop better therapies for this kind of prostate cancer, several clinical studies are now being conducted.

- Transitional Cell Carcinoma (Urothelial)

The uncommon and aggressive prostate cancer known as transitional cell (or ureothelial) cancer develops in the cells lining the bladder, urethra, and ureters (the tubes that connect the kidney and bladder). It accounts for 1% to 5% of all instances of prostate cancer. It frequently reappears and spreads to different bodily areas. The urethra, the tube that carries pee from the body to the outside, is where this particular type of prostate cancer most commonly forms in the cells lining that tube. Rarely, it may begin in the prostate and extend to the surrounding tissues and the bladder opening.

- Sarcomas

Prostate sarcoma, also known as soft-tissue prostate cancer, arises in the prostate's soft tissue, which includes the muscle and nerves, and it does so outside of the prostate glands. This kind of cancer targets stromal, or soft tissue, cells, which make up the body's connective tissues. Often missed in diagnosis, this type spreads quickly and is severe. Soft tissue prostate cancer is rare, arising in less than 1 in 1,000 prostate cancer cases (Gurarie, 2024).

Danger and risk factors of Prostate cancer

If prostate cancer spreads to areas other than the prostate, it may become fatal (metastatic illness). That being said, risk factors are traits and circumstances that raise the likelihood of contracting an illness. Certain risk factors, such a genetic predisposition to cancer and a family history of the disease, may be unavoidable, but other risk factors may be modified to help reduce the chance of acquiring prostate cancer. Kubo, et.al (2024) explained that, shift workers are known to be a high-risk population for sleep disturbances, gastrointestinal disturbances, obesity, hypercholesterolemia, hypertension, and also some cancers, including breast and colorectal. Prostate cancer, however, can be dangerous in a number of ways, particularly if it is not identified or treated appropriately. The following are some of the main risk factors connected to prostate cancer:

- Older age

Prostate cancer is more frequent after age 50, therefore the risk increases with age. Prostate cancer is increasingly frequent as people age, just like most malignancies. Men in their 75s to 79s are most likely to have prostate cancer.

- Race

Black individuals are more likely than those of other races to get prostate cancer, for unknown reasons. Prostate cancer is also more likely to be aggressive or progressed in Black individuals.

- Family history

An individual's risk may be raised if a blood relative such as parents, siblings, or kid has been diagnosed with prostate cancer. Prostate cancer risk may also be elevated if there is a significant family history of breast cancer or if the BRCA1 or BRCA2 genes, which raise the risk of breast cancer, have a history in the family.

- Obesity

Research on the relationship between obesity and prostate cancer suggests that obese individuals may be more susceptible to the disease than those who are deemed to be of a healthy weight. After first therapy, the cancer is more likely to be aggressive and to recur in obese individuals. Obesity or being overweight raises the chance of advanced or metastatic prostate cancer and a cancer that started in the prostate and has spread to another area of the body is known as metastatic prostate cancer.

- Inherited gene changes

Gene alterations inherited from parents, often referred to as variations or mutations, can increase the risk of prostate cancer, however they most likely make up a very tiny portion of prostate cancer cases overall. For instance: Men are more susceptible to prostate cancer if they have inherited variations of the BRCA1 or BRCA2 gene, particularly if the variants are associated to an elevated risk of breast, ovarian, and other malignancies in certain families. A disorder caused by inherited gene alterations, Lynch syndrome (also known as hereditary non-polyposis colorectal cancer, or HNPCC) in men increases the chance of developing prostate cancer among other cancers.

- Chemical exposures

Prostate cancer risk may rise with chemical exposure. For instance, research has indicated a possible connection between an increased risk of prostate cancer and arsenic exposure. Research however suggests that firemen may be more susceptible to toxins that raise their risk of prostate cancer. The National Academies of Science, Engineering, and Medicine considers there to be “limited or suggestive evidence” of a link between Agent Orange exposure and prostate cancer. (Cheng & Nelson, 2023).

Fatality rate of Prostate cancer

Although prostate cancer can be a deadly disease, most men who are diagnosed with the disease do not go on to die from it; in fact, over 3.3 million men in the United States who have received a prostate cancer diagnosis at some point are still alive today. Prostate cancer death rates decreased by approximately half between 1993 and 2013, most likely as a result of earlier detection and advancements in treatment. More recently, the death rate has stabilized, probably due to an increase in the number of cancers discovered at an advanced stage. Prostate cancer is the second most common cause of cancer-related deaths among American men, only exceeded by lung cancer. 1 in 44 men will die from prostate cancer.

With the exception of skin cancer, prostate cancer is the most often diagnosed cancer in the United States and the second most prevalent cause of cancer in males globally. The likelihood of acquiring prostate cancer rises with age: the older one gets, the higher their risk. While only around 1 in 456 males under 50 will receive a diagnosis, the risk soars to 1 in 54 for those between 50 and 59, 1 in 19 for those between 60 and 69, and 1 in 11 for those over 70. Men over the age of 65 are diagnosed with about 60% of all prostate cancer cases.

Kvåle, et.al (2024) explained that, a more rapid increase in incidence began around 1990 in all Nordic countries except in Denmark, where an increase was seen about 5 years later. In comparison, the incidence of white Americans doubled between

1986 and 1992 before declining until 1995. In Denmark, the chance of receiving a prostate cancer diagnosis before the age of 75 was around one-third that of Finland, Norway, and Sweden at the start of the twenty-first century. Ten times more heterogeneity in incidence rates than in death rates existed in the Nordic nations in 2001. Beginning in 1996, around five years after the US white population began to experience drops in mortality, Finland and Norway had statistically significant and ongoing yearly declines in mortality of roughly 2%. During that time frame, death rates in Sweden and Iceland levelled down, whereas in Denmark they were steadily rising.

We looked at the incidence and death rates by area to get a sense of the worldwide prostate cancer trend. The crude rates of prostate cancer death were 8.6 and 30.8, respectively. In more developed regions than in less developed ones, the crude rates of incidence and death were greater (122.4 vs. 12.0 and 23.4 vs. 5.6, respectively). In terms of human development, the crude rates of prostate cancer incidence and death were greater in the high-development regions compared to the low-development regions (incidence: from 129.0 to 7.3; fatality: from 23.1 to 6.0, respectively). With regard to the WHO regions and continents, the WHO Europe region and Americas region had much higher crude rates of incidence and mortality compared with other regions. With respect to continents, North America had the highest incidence rate, but the highest mortality rate was reported in Europe (Chen & Wang, 2017).

According to Rawla (2019) asserted that, international mortality rates for prostate cancer vary considerably worldwide. 2018 saw Central America record the highest death rates (10.7 per 100,000 people), followed by Western Europe (10.1) and Australia and New Zealand (10.2). The nations of Northern Africa (58.8) and Asia (South-Central, 3.3; Eastern, 4.7, and South-Eastern, 5.4) had the lowest rates recorded. Asia accounted for 33.0% of all prostate cancer fatalities (118,427 deaths), with Europe coming in second with 29.9% (107,315 deaths). Prostate cancer mortality increases with age; around age 65, almost half of all fatalities are related to the disease.

Cai, Chen, Zhang & Pan (2020) explained that, in the year (2016), prostate cancer cases (1,435,742; 95% uncertainty interval (UI), 1,293,395–1,618,655) were nearly 2.5-fold the number in 1990 (579,457; 95% UI, 521,564–616,107). Deaths increased by 2.0-fold from 191,687 (95% UI, 168,885–209,254) in 1990 to 380,916 (95% UI, 320,808–412,868). From 17.75 (95% UI, 18.91–15.95) in 1990 to 22.12 (95% UI, 19.92–24.91) in 2016, the worldwide age-standardized incidence rate (ASIR) increased by 24.62%. While there has been a minor drop globally in the age-standardized death rate (ASDR), there has been a growing tendency in certain regions. According to sub-types of the sociodemographic index (SDI), from 1990 to 2030, prostate cancer would most likely develop in high SDI nations. The highest mortality rate will simultaneously be seen in nations with inadequate SDI.

Bleyer, Spreafico & Barr (2020) Worldwide, the incidence of prostate cancer has increased in all groups between ages 15 and 40 years and increased globally at a steady rate averaging 2% per year since 1990. This age group had a six-fold higher diagnostic rate of distant illness in the US compared to older males. Their survival rate increased less than that of older males, stage after stage. While the overall 5-year relative survival rate for males diagnosed in the United States between the ages of 40 and 80 was between 95% and 100%, it was 30% for those diagnosed between the ages of 15 and 24, 50% for those diagnosed between the ages of 20 and 29, and 80% for those

diagnosed between the ages of 25 and 34. In most nations, the prevalence of prostate cancer among older adolescents and young adults has grown. There is some evidence to suggest that over-diagnosis, prostate-specific antigen screening, and under-diagnosis may contribute to this. Trends in obesity, physical inactivity, HPV infection, drug abuse, exposure to environmental toxins, and/or referral patterns may also be to blame.

70% of instances of prostate cancer between 2017 and 2021 were found to be localized, meaning the disease had not spread outside the prostate. In prostate cancer, 8% were discovered at a distant stage (the disease had spread to distant portions of the body) and 14% were detected at a regional stage (the cancer had spread to adjacent lymph nodes, tissues, or organs). Five years later, 97% of individuals with prostate cancer were still alive. But survival differed according to diagnostic stage. Because many prostate tumours develop slowly or not at all, survival rates are great. The aim of prostate cancer screening is to identify tumours that might spread if left untreated.

Life Effects of Prostate Cancer

The side effects might impair the patients' sleep and mental health and cause them to feel nervous or sad. However, if the prostate cancer worsens, the patient might not feel well enough to perform all of their usual activities. However, Early treatment decisions are fraught with the sense of having to choose between quality of life and longevity, even though it is unclear what the outcome will be on either side of the balance (Chen, et.al, 2007; Roth, et.al 2008 cited in Bowie, 2022) Additionally, people undergoing radiation or chemotherapy could feel fatigued and require more time to recuperate. The important life effects of prostate cancer are listed below:

- **Metastasis**

Other bodily components including the liver, lungs, lymph nodes, and bones can get infected with prostate cancer through metastasis. The extreme pain, fractures, and spinal cord compression that can result from bone metastases are very prevalent and have a major negative influence on survival and quality of life. There is a higher death rate from metastatic prostate cancer because it is more difficult to treat and frequently incurable.

- **Urinary Incontinence**

The lack of bladder control, which can vary from little leaking to total loss of control, is known as urinary incontinence. Urinary discomfort, increased urgency, and frequent urination are possible additional symptoms. Numerous things can lead to urinary issues. However, after first prostate cancer therapy, damage to the nerves and muscles controlling urine function is usually the source of them.

- **Hormonal Imbalance**

Reducing testosterone levels with androgen deprivation therapy (ADT), a frequent treatment for prostate cancer, can cause hot flashes, weight gain, muscle loss, osteoporosis, and mood and energy swings. Hormonal imbalances that persist over time can cause substantial physical and psychological changes that might negatively affect a patient's general health and quality of life.

- Erectile Dysfunction

The inability to get or sustain an erection, known as erectile dysfunction (ED), is a common adverse effect of radiation therapy, hormone therapy, or surgical excision of the prostate, known as a prostatectomy. Impotence, another name for erectile dysfunction, is the inability of a man to get or keep an erection long enough for satisfying sex. The inability to get or sustain an erection, known as erectile dysfunction (ED), is a common adverse effect of radiation therapy, hormone therapy, or surgical excision of the prostate, known as a prostatectomy.

- Infertility and sexual dysfunction

The inability to conceive through sexual activity is known as infertility. Infertility is a side effect of several prostate cancer therapy options. The substance that keeps semen liquid is produced by the prostate. Infertility is an inevitable and irreversible side effect of surgery since a guy who has had his prostate removed cannot produce or ejaculate semen. Additionally, radiation can harm the testicular sperm cells or the prostate's capacity to make semen. Prostate cancer treatments, especially radiation therapy and surgery (radical prostatectomy), can harm blood vessels and neurones that are important for sexual function, which can result in erectile dysfunction and decreased desire. This can lead to mental and psychological stress and have a major impact on the sexual health and relationships of the patient.

- Psychological Impact

Anxiety, despair, and stress can arise after a prostate cancer diagnosis and treatment. These psychological problems are exacerbated by worries about treatment adverse effects and cancer recurrence. Patients with mental health issues may have worsening general health as well as more difficult treatment adherence and results.

- Fatigue

A persistent sense of exhaustion that keeps one from engaging in their regular activities is called fatigue. This is not the same fatigue that results from overexertion or intense activity. Fatigue is a common adverse effect of chemotherapy and androgen deprivation treatment (ADT) in males. Fatigue is a typical side effect of radiation therapy, chemotherapy, and hormone therapy, and it can also be brought on by the emotional and physical strains of treating prostate cancer.

- Financial Burden

Treatment for prostate cancer can be expensive and may involve radiation, chemotherapy, hormone therapy, surgery, and follow-up care. Furthermore, the inability to work and consequent revenue loss might intensify financial stress. The patient's family may also be impacted by the financial strain, which might increase stress levels and lower the standard of treatment.

- Osteoporosis

Although it is commonly believed that osteoporosis only affects women, males can also get it. Prostate cancer treatments are increasing the incidence of osteoporosis in males by increasing their risk of bone loss. The cancer therapies listed below, which

include hormone therapy and chemotherapy to eradicate the tumour, may hasten the onset of osteoporosis. Not every man treated for prostate cancer will experience osteoporosis, fractures, or bone loss as a result of cancer therapy. Medication and a healthy lifestyle can both help prevent and treat osteoporosis.

Prevention of Prostate Cancer

One of the most prevalent malignancies among those who have a prostate is prostate cancer. Chen & Zhao (2013) holds that, Prostate cancer tends to develop after the age of fifty in men, but un- fortunately many patients do not have symptoms, they do not take treatment, and eventually die. Prostate cancer instances may be slowly increasing, and older adults may pass away from pneumonia, heart or circulatory illness, other unrelated diseases, or old age as additional causes of death. To avoid prostate cancer, think about attempting the following listed below:

- Eating healthy diet

While research results have been conflicting and this hasn't been definitively shown, there is some indication that eating a healthy, low-fat, fruit- and vegetable-rich diet may help reduce the incidence of prostate cancer. However, meats, nuts, oils, and dairy products like milk and cheese are examples of foods high in fat content. According to certain research, males who consumed the most fat on a daily basis were more likely to get prostate cancer. This does not establish a link between prostate cancer and excess fat. Limit your intake of fatty meals or go for low-fat options to cut down on the quantity of fat you consume each day. For example, consider thinner meat cuts and low-fat or reduced-fat dairy products, and cut back on the amount of fat you add to food when cooking. This does not establish a link between prostate cancer and excess fat. This connection has not been seen in other research. However, cutting back on your daily fat intake offers additional scientifically supported advantages, like improving your heart health and weight control.

- Eating good amount of fruits and vegetables

Vitamins and other nutrients included in fruits and vegetables are expected to lower the incidence of prostate cancer, while specific nutrient reductions have not been demonstrated by studies. Consuming a higher proportion of fruits and vegetables also tends to reduce ones' appetite for other meals, such as those heavy in fat. However, one can also include an extra serving of a fruit or vegetable at each meal to increase the quantity of fruits and vegetables they consume daily.

- Maintaining healthy weight

Research showed that the highest daily risk of prostate cancer was associated with males who consumed the most dairy products, including milk, cheese, and yoghurt. The danger linked with dairy products is believed to be minimal, however research findings have been inconsistent. Exercise most days of the week and stick to a nutritious diet high in fruits, vegetables, and whole grains if you are already at a healthy weight.

- Exercise regularly

Men who exercise may have a lower risk of prostate cancer, according to the majority of studies on the relationship between exercise and prostate cancer risk. In

addition to its many other health advantages, exercise can lower your chance of heart disease and other malignancies. You can lose weight or maintain your current weight with the aid of exercise.

- Consulting the physician on your risk

The risk of prostate cancer is higher in certain males. Medication is one of the alternatives for risk reduction available to those who have a very high risk of prostate cancer. However, consulting with your doctor if you believe you are at a high risk of prostate cancer is a significant method of preventing cancer.

Treatment of Prostate Cancer

Options for treating prostate cancer vary depending on a number of variables, including how quickly the disease is progressing, if it has spread, the patients' general health, and any possible advantages or disadvantages of the treatment. Hurwitz (2018) affirmed that, Prostate cancer entails a complete spectrum from indolent disease to highly aggressive lethal forms of the disease. On the other hand, the following are prostate cancer treatments:

- Active surveillance

If cancer progresses slowly and does not spread, a patient's doctor may choose to watch rather than treat them. Nonetheless, it's crucial to get screenings, scans, and biopsies every one to three years to track the progression of cancer. Furthermore, regular surveillance is most effective when the cancer is localized to the prostate, growing slowly, and not producing any symptoms.

- Surgery

A damaged prostate gland is removed during a radical prostatectomy. When a prostate cancer is effectively removed, it usually does not spread. If the surgeon thinks the patient will benefit from this procedure, they can advise them on the optimal removal technique.

- Open radical prostatectomy

The prostate gland is removed by the doctor through a single abdominal incision that runs from the center of your abdomen to the pubic bone. Compared to less invasive procedures like robotic prostatectomy, this approach is less prevalent.

- Robotic radical prostatectomy

Using a robotic radical prostatectomy, the surgeon performing the procedure can operate through several microscopic incisions as they use a console to control a robot system rather than working directly.

- Radiation therapy

Radiation therapy may be used alone or in conjunction with other therapies to treat prostate cancer. Additionally, radiation can aid in relieving the symptoms.

- Brachytherapy

Brachytherapy is a type of internal radiation therapy in which radioactive seeds are inserted into the prostate. With this method, cancer cells are eliminated without harming the surrounding healthy tissue.

- External beam radiation therapy

Strong X-ray beams are directed at the tumour by a machine during external beam radiation therapy (EBRT). Significant amounts of radiation may be directed towards the tumour with specialized EBRT techniques like IMRT, all while protecting healthy tissue.

- Systemic therapies

If the cancer has progressed outside of the prostate gland, the doctor could suggest systemic treatments. With systemic therapy, chemicals are sent throughout the human body to either kill or stop the development of cancer cells.

- Hormone therapy

Testosterone stimulates the proliferation of cancer cells. This medication is used in hormone treatment to counteract testosterone's effect in promoting the development of cancer cells. The medications function by either lowering the amount of testosterone or blocking testosterone from reaching cancer cells. As an alternative, the doctor can advise an orchiectomy, which involves removing the testicles to stop them from producing testosterone. However, those who would prefer not to take medication might choose to get this operation.

- Chemotherapy

Chemotherapy kills cancer cells with medication. If the tumour has progressed beyond the prostate gland, patients may be treated with hormone therapy in addition to chemotherapy.

- Immunotherapy

The body's immune system becomes stronger with immunotherapy, making it more capable of recognizing and combating cancer cells. Immunotherapy may be suggested by the doctor to treat advanced cancer or recurrent cancer, which is cancer that disappears for a while before coming back.

- Targeted therapy

In order to stop cancerous cells from proliferating, targeted treatment focusses on the genetic alterations (mutations) that cause healthy cells to become cancerous cells. Prostate cancer patients who have BRCA gene mutations are treated with targeted treatments that kill cancer cells.

- Focal therapy

A more recent type of treatment that eliminates tumours inside the prostate is called focal therapy. This treatment may be suggested by the doctor in the event that the cancer is low-risk and has not spread.

- Cryotherapy

The cryotherapy is a type of prostate cancer treatment which involves the process of freezing the cancer cells cold gases, which removes the tumour.

Conclusion

In conclusion, prostate cancer remains a formidable challenge in the 21st century, marked by its potential fatality and complex treatment landscape. However, advancements in research and technology provide a beacon of hope, highlighting the importance of early detection and proactive prevention strategies. By embracing lifestyle modifications, advocating for regular screenings, and exploring innovative treatment options, we can significantly mitigate the risks associated with prostate cancer. The integration of personalized medicine and public health initiatives will be crucial in improving outcomes and reducing the burden of this prevalent disease. As we move forward, a collective commitment from healthcare providers, policymakers, and communities is essential to combat prostate cancer effectively, ensuring a healthier future for men worldwide.

Recommendations

1. It is advised to encourage men, especially those at higher risk, to engage in regular prostate-specific antigen (PSA) screenings and discussions with healthcare providers to facilitate early detection.
2. Implementing educational initiatives to raise awareness about prostate cancer risk factors, symptoms, and the importance of early intervention, particularly in underserved communities is recommended.
3. It is advised for men to advocate for lifestyle changes such as a balanced diet, regular exercise, and smoking cessation, as these can significantly reduce prostate cancer risk and improve overall health.

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