

The Occurrence of Cancer can be Prevented

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Citation: Franjic, S. (2023). The Occurrence of Cancer can be Prevented. *Int J Cancer Res Ther*, 8(3), 80-84.**Abstract**

The occurrence of cancer can be prevented through primary prevention: maintaining desirable body weight, adequate nutrition, sufficient intake of fruits and vegetables, regular physical activity, changes in sexual behavior and reduced exposure to carcinogens in the environment, and avoiding tobacco and alcohol. Scientific research indicates that one-third of the disease can be prevented primarily by stopping smoking and changing eating habits. Early detection of cancer, or screening, plays a very important role in the fight against cancer.

Keywords: Cancer, Early Detection, Prevention, Patients, Health**1. Introduction**

Despite the recent decline in most cancer prevalence quotes, lengthy-time period mortality quotes stay unchanged [1]. One of the maximum crucial elements for the expanded survival of most cancers is detection at an early level. Clinical assays that discover the early occasions of most cancers via using molecular signatures or biomarkers provide a possibility to intrude and save most cancers' progression. Molecular signatures of the phenotype of a cell that aids in early most cancers detection and chance evaluation will probably play a crucial position in screening and early detection. Although new records and technology are surely the using pressure in biomarker discovery, translating new findings into scientific software stays a prime assignment.

2. Cancer Development

Tumor improvement is a complicated manner requiring coordinated interactions among several proteins, signaling pathways, and cell types [1]. As a result of significant research on the molecular pathogenesis of most cancers, numerous novel regulatory pathways and networks were identified. The steps in those pathways have delineated a range of specific occasions in cells, marked with the aid of using morphological and histological modifications and changed expression of genes and proteins. During the transformation of a regular mobile right into a most cancers cell, the cell signature modifications, and those modifications come to be specific indicators of their presence and inherent features. By reading those indicators accurately, we can enhance the early detection and prognosis of person cancers. After a long time of the usage of simple studies in an try to get to the bottom of the underlying cellular and molecular mechanisms of most cancers, the clinical network has

exposed novel candidate goals for the early detection of most cancers. By the time a tumor is detected, numerous molecular modifications have already occurred. Diagnostic assays to discover those modifications and the usage of biomarkers have tremendous cap potential for early detection.

Biomarker studies call for knowledge-pushed surroundings wherein investigators generate, make contributions, control, and examine statistics to be had from several assets and technological platforms. The intention is a non-stop comments loop to accelerate the interpretation of statistics into knowledge. Collaboration, statistics sharing, statistics integration, and requirements are crucial to attaining this intention. Only with the aid of using seamlessly structuring and integrating statistics reasserts will the complicated and underlying reasons and results of cancers be revealed, and powerful prevention, early detection, and customized remedies be realized. There is a trendy consensus that if markers from the early stages of the tumor can be identified, then the remedy is probably to be greater a success.

3. Early Detection

Fundamental shifts in the healthcare paradigm pushed with the aid of using the slow transition to "patient-centered" fee-primarily based totally health carrier delivery, open new horizons to customized medicinal drugs providing the cap potential to offer well-timed and cost-effective scientific answers to stratified affected person subpopulations with predictable final results margins [2]. By the usage of biomarkers as measurable indicators of predisposition to or severity of an ailment state, the customized medicinal drug enables early detection, tracking, and evaluation of dangers

related to an ailment, and guiding healing selections. Unlike therapeutics (Rx), which go through 3 levels of scientific trials previous to marketing authorization and whose impact on sufferers may be pretty straightforwardly validated with the aid of using affected person-mentioned final results measures, there's no readability withinside the molecular diagnostics subject on how tons proof is needed to show the value of a check. As a rule, the maximum diagnostic research attention on accuracy and feasibility is a rarely sufficient prerequisite for higher affected person health or different downstream improvements. The high value of molecular diagnostic trying out is determined withinside the pharmaceutical pipeline because it helps discovery of biomarker-primarily based totally treatment options concentrated on ailment reasons as opposed to signs. It is clear that these days, 50% of all scientific trials carried out with the aid of using pharmaceutical corporations collect DNA from sufferers which allows you to facilitate biomarker improvement. Moreover, is additionally recognized that biomarker-primarily based totally diagnostics utilized in scientific trials can grow possibilities of regulatory approval and beautify prescription.

The improvement of most cancers is preceded with the aid of using several germline and somatic mutations, structural modifications in chromosomes, and different genetic and epigenetic modifications, which rework regular cells into benign tumors and, progressively, into malignant and metastatic forms [3]. Cancer is a heterogeneous, multigenic institution of diseases; the heterogeneity lies now no longer most effective on the biochemical level (genes, proteins, metabolites), but additionally on the tissue and populace level. The substantial complexity makes most cancers detection, prognosis, and remedy pretty challenging. Although cancers recognized at in advance stages have a miles higher diagnosis in comparison with cancers recognized at later stages, it's miles noteworthy that many cancer sufferers are recognized at a level at which most cancers are to a way superior to be cured.

Currently, pointers for early detection of most cancers in average-chance people are to be had for colorectal, cervical, breast, endometrial (in menopausal women), and prostate cancers, and in high-chance people withinside the case of lung most cancers. There has been a massive growth in “cancer” prevalence as a result of screening, however without a proportional lower in mortality no matter the remedy. This means that screening identifies a big reservoir of indolent cancers (overdiagnosis), which might have in no way come to be symptomatic without screening, and did now no longer require any remedy. However, as it isn't always recognized at this time which lesions are indolent, many people are positioned via extensive remedies unnecessarily, which regularly reasons tension in addition to massive physical and monetary harm. A shared choice-making dialogue among the sufferers and their physicians, primarily based totally on present statistics, and additionally taking into consideration a person affected person's values and philosophies on healthcare, is crucial.

The cap potential to perceive tumors that can be destined to progress, and which might be related to morbidity and mortality at an

early level, will permit powerful remedy interventions and decrease deaths. Identification of tumor-unique molecular signatures is vital for a brand new method of early detection, prognosis, diagnosis, ailment class, and chance prediction. It may also assist to enforce suitable remedy selections and healing interventions, revealing remedy reaction and efficacy (i.e., a measurable impact on a scientific quit point), and to triumph over drug resistance in a precise, affected person-unique method. Such exercise of tailored “personalized medicine”, primarily based totally on the molecular portraits of tumor cells, permits physicians to tell persons, and sufferers of the anticipated results – for example, whether or not remedies or surveillance techniques might be beneficial, and while to prevent remedy primarily based totally on reaction to drug(s). An instance of numerous home windows of scientific relevance withinside the control of most cancers for the duration of its direction of improvement is proven wherein special biomarker profiles may be carried out to every of those home windows for the most useful control of most cancers.

4. Electrodiagnosis

As strategies for the early detection of most cancers enhance, and as most cancers remedies evolve and come to be greater powerful, sufferers are residing longer, and the range of most cancer survivors is increasing [4]. As a result, greater secondary complications because most cancers and their remedies are being diagnosed. Neuromuscular complications associated with the underlying cancers themselves or because of related remedies consisting of surgery, chemotherapy, and radiation remedy are not unusual places however probably are underreported.

Neuromuscular abnormalities were clinically detected in 2.5%–5.5% of sufferers with lung or breast cancers and in 28.5% of sufferers with diverse neoplasms through the usage of electrodiagnostic research. Classification of those abnormalities may be prepared on both an anatomical degree and with the aid of using etiology. Cancer can directly affect the peripheral worried system at any level thru several mechanisms. These encompass direct compression or infiltration, hematogenous spread, lymphatic spread, meningeal dissemination, or perineural spread. Peripheral worried system involvement also can be resulting from paraneoplastic syndromes or not unusual place secondary consequences associated with most cancers, consisting of malnutrition, weight loss, or infection. Finally, obtained neuropathies can result from facet consequences of most cancer remedies themselves, along with surgery, chemotherapy, radiation remedy, hematopoietic stem cell transplantation, or immunologic remedy. Patients may additionally have preexisting neurologic conditions, consisting of diabetic polyneuropathy, that may be exacerbated with the aid of using most cancers or their associated remedies. Often, a mixture of etiologies may be diagnosed in person sufferers.

Involvement can arise at any level of the peripheral worried system, along with the anterior horn cells, nerve roots, sensory ganglia, brachial or lumbosacral plexus, single or more than one peripheral nerve, neuromuscular junction, and the muscle. Anatomical levels

are a handy technique for categorizing neuromuscular diagnoses in most cancers. Often more than one level is involved. Neural harm on the cell level might also additionally take location on the cell body, axon, myelin, or a mixture of all of those.

Electrodiagnostic tools, consisting of nerve conduction studies (NCS) and needle electromyography (EMG), are beneficial in assessing the feature of the peripheral worried system in most cancer sufferers. Electrodiagnostic research is an extension of the scientific examination, and the anticipated scientific and electrodiagnostic findings are depending on the location, distribution, and pathophysiology of the neurologic lesion. NCS and needle EMG are uniquely appropriate to evaluate the feature of all additives of the peripheral worried gadget, along with sensory nerves, decrease motor neurons, peripheral axons, the neuromuscular junction, and muscle fibers. There are many symptoms for acting in electrodiagnostic research. This research can verify a suspected neuropathic lesion in addition to ruling out different probable possibilities. Electrodiagnosis can assist with localizing lesions, figuring out chronicity and severity, and detecting subclinical neuropathic/myopathic processes. Information concerning the pathophysiology and assessing diagnosis for neurologic restoration may be carried out with electrodiagnosis. Objective records approximately peripheral worried gadget feature may be acquired in sufferers who're not able to cooperate, consisting of the sedated and intubated affected person determined withinside the extensive care unit. Finally, records acquired with NCS and needle EMG withinside the most cancers-affected person can regularly help in chemotherapy or radiation remedy choice-making.

5. Cancer Screening

Cancer screening refers to ordinary, periodic trying out for signs of most cancers amongst people who've no signs [5]. It is the shape of secondary prevention. In the context of most cancer screening, secondary prevention intends to enhance results with the aid of using shifting level at prognosis to 1 this is much less superior and deleterious, relative to what happens withinside the absence of most cancer screening.

Cancer screening is a sorting manner. Screenees are taken care of in corporations: people with poor checks and people with superb checks. A poor check finds nothing suspicious for most cancers and does now no longer require extra scientific attention. A superb check is famous for something this is suspicious for most cancers or with unknown significance concerning most cancers; it calls for extra scientific attention, noted as a diagnostic assessment. That manner is meant to decide whether or not most cancers are or aren't always present, however, exercise can vary from active surveillance to the elimination of an abnormality. Active surveillance (sometimes known as watchful waiting) refers to a timetable of minimally- or non-invasive trying out to reveal clinically crucial modifications. Resection of an abnormality is taken into consideration in diagnostic assessment as opposed to remedy if a definitive prognosis has now no longer been made or can not be made otherwise.

Cancer screening isn't always meant in and of itself to offer a definitive prognosis. Its rationale is to perceive strange scientific conditions, consisting of growths, occult blood, or a biomarker which could advise most cancers. Cancer screening objectives are to result in the detection of cancers whose diagnosis will enhance with in advance detection, and it wishes to result in the detection of sufficient of these cancers to make screening a profitable public health activity. Cancer screening is neither meant to nor is capable of resulting in the detection of each most cancers because the natural records of most cancers are erratic, generation has limitations, and common screening is impractical.

6. Prevention

Cancer prevention screening might be of value if a few precancers detected via most cancers screening might have come to be invasive and in the end deadly to most cancers withinside the absence of most cancer screening [5]. Detection of a precancer that doesn't meet that designation represents overdiagnosis. The definition of overdiagnosis may be modified slightly to be inclusive: screen-detected precancer or invasive most cancers that in no way might were recognized, both as precancer or invasive most cancers, withinside the absence of most cancers screening.

The overarching intention of each early detection most cancers screening and most cancers prevention screening is to lessen cause-specific mortality. We must now no longer, however, count on that most cancer prevention screening is simply early detection most cancers screening at an early level, and that the benefits might be greater significant and harms much less significant than detection at a later level. Precancer, at the time of detection, isn't always life-threatening because it can not metastasize. Advances in generation have led to the detection of increasingly more precancerous abnormalities with unsure scientific relevance, growing quandaries for clinicians and sufferers. It is almost positive that overdiagnosis is greater normal in most cancers prevention screening in comparison with early detection of most cancers screening. Even so, the remedy for precancers has the cap potential to be much less exhausting than the remedy for invasive cancers.

The principal idea these days is that most cancers are probably avoided or handled with the aid of using the usage of small molecules directed at unique and, perhaps, more than one of most cancers genes, signaling proteins, and transcription elements [6]. In particular, natural dietary or dietary elements have emerged as modulators of crucial cell signaling pathways and consequently will be a number of the maximum promising small-molecule inhibitors. Molecules of this kind are professed as being typically secure and can have the capability to save you or opposite premalignant lesions and/or lessen secondary number one tumor prevalence. Many of those compounds seem to behave on more than one tumor promoter-inspired cell pathway with a strong anticancer pastime, low toxicity and constrained unfavorable facet consequences. This pastime on the tumor advertising level is relatively sizeable due to the fact although every level of most cancer improvement should offer cap potential goals for anticancer dealers,

the advertising level might be the maximum best goal due to its long period.

Historically, studies efforts have centered closely on early detection and remedy with little emphasis on environmental or way of life reasons. Unfortunately, the efficacy of most cancer treatment options, mainly for overdue-level ailments, stays dismal. Anticancer agent discovery is a lengthy and luxurious manner, and most cancer prevention studies consistent with se have reputedly in no way been a prime health studies emphasis till very recently. Thus, effective current technology is critical withinside the quest for accelerating the manner of drug discovery, mainly to perceive molecules that can suppress more than one cell signaling pathway and to apprehend how those chemical substances perturb those pathways with the aid of using modeling their interactions with their goal proteins.

7. Opportunities

Because of its heterogeneity and the significant personal and public health burden, the developing populace of younger most cancers survivors deserve a growth in studies referring to the etiology and pathogenesis of most cancers and early detection and prevention of unfavorable results [7]. This additionally affords crucial opportunities for researchers. Therapeutic exposures going on at recognized time points, with near follow-up after the exposure, allow researchers to take a look at testable hypotheses and to decide the consequences of host and remedy-associated elements in the improvement of unfavorable results starting from carcinogenesis and organ disorder to psychosocial consequences. Opportunities additionally exist to explore gene- surroundings interactions which could regulate personal responses to remedy, in addition to the susceptibility to expand unfavorable results, consequently imparting insights into the identity of high-chance populations.

Notwithstanding the specific opportunities, numerous demanding situations exist in the behavior of survivorship studies. Cancer survivorship studies are an evolving subject. With greater than 20 % of younger most cancers sufferers in want of higher remedy options, new dealers and mixtures of dealers are being developed. Targeted treatment options, along with small molecules and monoclonal antibodies, will probably make contributions to expanded survivorship, and assessment of the cap potential overdue consequences of those new dealers will want to preserve consistent with their expanded usage. Recent refinements in radiation remedy consisting of proton beam remedy and popularization of surgical strategies consisting of laparoscopy were meant in large part to reduce overdue consequences. The evidence-primarily based medicinal drug will want to decide whether or not they may live as much as this expectation. Furthermore, the impact of genetic profiles on susceptibility to overdue consequences, in addition to their interplay with way-of-life exposures consisting of tobacco, alcohol, and weight-reduction plan, is of developing hobby and has now no longer been explored. However, the multifactorial etiology of the unfavorable consequences, coupled with the heterogeneous nature of the affected person populace, necessitates big pattern siz-

es withinside the context of well-characterized cohorts with entire lengthy-time period follow-up, and this stays the biggest assignment in accomplishing sound survivorship studies.

8. Survivors

After most cancers survivors entire preliminary remedy and start to go back to their former roles, they keep to want most cancers care because of continual signs in addition to their chance of recurrence and 2nd cancers [8]. Follow-up care, at minimum, includes the survivors seeing a doctor each three to four months for two or three years to test for recurrence, metastasis, and facet consequences. Survivors may additionally communicate to their physicians approximately growing survivorship care plans that cowl bodily, emotional, social, and religious needs. Survivors keep to experience sizeable informational wishes approximately most cancers assessments and remedies (70.8%), ways to growth fitness or lessen most cancers chance (67.8%), facet consequences of most cancers (63.3%), most cancers-associated mental issues (54.4%), insurance (42.1%), and intercourse and fertility (30.9%).

There are guidelines for surveillance—looking for the recurrence of the unique most cancers—and screening—the look for new cancers. These varieties of early detection can enhance remedy efficacy, excellent life, and ordinary diagnosis. Surveillance is specifically crucial for survivors. Mammography utilization has been proven to lower from 79.8% amongst 1-12 months breast most cancers survivors to 62.6% at five years, suggesting that quotes can be decreased than anticipated amongst lengthy-time period survivors. Studies have proven a decrease in breast and colorectal most cancers surveillance quotes among non-Whites than Whites and, for breast most effective, amongst people with decreased SES, which might also additionally in part result from loss of get entry to oncologists and diagnostic equipment. Non-White survivors rely upon number one care physicians (PCP) as opposed to oncologists greater than Whites. Those from decrease-SES corporations are much less probably to peer physicians, much more likely to make use of pressing care (e.g., emergency rooms), and feature extra want of help with appointments, transportation, and out-of-pocket costs. Other elements consisting of worry of recurrence might also additionally influence disparities in surveillance quotes. There is a want to enhance surveillance for survivors typically and amongst non-White and low-SES corporations in particular.

9. Follow-up Care

Optimal follow-up of survivors consists of each ongoing tracking and evaluation of continual and overdue consequences of most cancers' remedy and the successful creation of suitable interventions to ameliorate those sequelae [9]. This is challenging, and ought to apprehend the significance of stopping premature mortality from the ailment or its remedy, and the prevention or early detection of the physiological and mental assets of morbidity. The prevention of overdue consequences, 2nd cancers, and recurrences of the primary ailment call for watchful follow-up and the most useful use of early detection screening strategies. Physical symptom control is as crucial in survivorship as it's miles for the duration of remedy.

Effective symptom control for the duration of the remedy might also additionally save you or reduce lasting consequences.

There has been no consensus on ordinary pointers for ordinary follow-up after most cancers remedy. Regular tracking of health reputes post-most cancers remedy is advocated as it must (a) allow the well-timed prognosis and remedy of lengthy-time period headaches of most cancers remedy; (b) offer the possibility to institute preventive techniques consisting of weight-reduction plan modification, tobacco cessation, and different way of life modifications; (c) facilitate screening for, and early detection of, a 2nd most cancers; (d) permit well-timed prognosis and remedy of recurrent most cancers; and (e) enhance the detection of functional, bodily, or mental disability.

Follow-up care and tracking for overdue consequences are typically completed greater systematically and rigorously for survivors of formative years of most cancers whilst they remain a part of the program or clinic. The tracking of person most cancer sufferers for the improvement of overdue consequences, specifically outdoor oncology practices, is neither thorough nor systematic. Survivors of each person and formative years cancers must be monitored at ordinary periods for the overdue and long-term consequences of remedy.

The affected person's age at prognosis, facet consequences of remedy mentioned or determined for the duration of remedy, calculated cumulative doses of medication or radiation, and an outline of overdue consequences maximum probably for a given affected person given the remedy records must be summarized and stored on file. A replica of this precis must be supplied to the affected person, or to the figure of an infant who has passed through remedy for most cancers. The significance of conveying these certain remedy records to number one care companies must be surely communicated, mainly if follow-up will arise in the number one/own circle of relatives care setting. Finally, screening assessments that could assist discover subclinical consequences that might come to be clinically applicable withinside the destiny must be listed.

10. Conclusion

Due to the high frequency of malignant diseases and their high mortality rate, cancer has been called the epidemic of modern times. In this way, we try to raise awareness about the prevention of malignant diseases, diagnosis, and treatment options. Cancer is not exclusively a health problem of the affected individual but has a great impact on wider social and economic development.

Malignant diseases have common risk factors (smoking, alcohol consumption, unhealthy diet, physical inactivity, UV radiation, irresponsible sexual behavior, etc.). It is possible to influence a large number of cancers precisely by preventing these factors, i.e. by preventing the onset of the disease through primary prevention: maintaining a desirable body weight, adequate nutrition, sufficient intake of fruits and vegetables, regular physical activity, changes in sexual behavior and reduced exposure to carcinogens in the environment, and avoiding tobacco and alcohol. In addition to primary prevention, early detection of cancer - secondary prevention, i.e. screening, plays a very important role in the fight against cancer, because early detection and timely treatment can significantly reduce cancer mortality.

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