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Different Stages, Grades and Types of Cancer: A Systematic Review

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The word "cancer" refers to a wide range of illnesses where abnormal cells grow and spread out of control. These abnormal cells may develop into tumors or interfere with normal function of the organ. Cancer is named after the part of the body where it first appears, and it can start practically anywhere in the body. The mutation of genes regulating the growth and division of our cells, as well as other functions, is what causes this disease. Determining the cancer grade and stage plays a significant role in concluding the severity and treatment of a cancer. The grade of a cancer describes the abnormality and aggressiveness of the cancer cells, which are typically classified as low, moderate, or high grade. Cancer stage, on the other hand, refers to the size of the tumor and the extent of its spread, which is typically expressed using Roman numerals, ranging from (I) as the least severe up to (IV) as the most severe. Both grading and staging are important in cancer diagnosis and treatment. Different types of cancer such as carcinoma, sarcoma, leukemia, and lymphoma have different methods for assigning a cancer grade, and each cancer type has its own staging system. Understanding the grade and stage of cancer can be vital for determining prognosis and selecting the appropriate treatment.

Introduction

Numerous people and those they care about are affected by cancer, making it a significant concern for global health. On top of that, cancer is one of the deadliest diseases affecting humans; it causes millions of deaths annually and has a wide variety of telltale signs and symptoms. According to Lambert et al. (2017), over a hundred different diseases fall into these categories, yet they all share specific molecular pathways and metabolic changes. Statistics from the World Health Organization indicate that cancer affected 19.3 million people in 2020, resulting in 10 million fatalities. As stated by Weinberg (1996), he identified more than one hundred different types of cancer. Cancers can develop in nearly every bodily tissue, and some even produce many varieties. Not only that, but every cancer is distinct.

Extensive research has firmly established the significant impact of the tissue microenvironment and inflammatory changes on tumor growth and survival (Upadhyay, 2021). Nevertheless, understanding the root causes and contributing factors comprehensively remains challenging and necessitates further investigation. Numerous reports of genetic mutations can result in the transformation of normal human cells, ultimately leading to the formation of tumors and the development of cancer. Scientists and researchers have employed numerous scientific and technological methods to comprehensively study, define, explore, and address these highly concerning diseases. A wide range of approaches are used in oncological research, such as genetic, molecular, biochemical, biophysical, immunological, genomic, proteomic, systems, and computational biology.

As per Hanahan et al. (2011), the study discusses the various biological capabilities acquired during the development of human tumors, known as the hallmarks of cancer. The hallmarks serve as a framework for understanding the intricacies of cancer. The factors involved encompass sustaining proliferative signaling, evading growth suppressors, resisting cell death, enabling replicative immortality, inducing angiogenesis, and activating invasion and metastasis. Genome instability is crucial in

generating genetic diversity, accelerating the acquisition of various hallmarks. Additionally, inflammation contributes to the facilitation of multiple hallmark functions. Over the past decade, researchers have significantly advanced in understanding two crucial factors that could have broad implications—altering energy metabolism and avoiding immune destruction. Tumors are not just made up of cancer cells. They also consist of recruited normal cells that create the tumor microenvironment, which helps the tumor acquire its characteristic traits. The growing recognition of the broad applicability of these concepts will significantly impact the advancement of novel approaches to cancer treatment.

Furthermore, there are many different kinds, grades, and stages of cancer, each of which affects the prognosis, treatment options, and overall complexity of the disease. Improving cancer prevention, diagnosis, care, and outcomes requires thoroughly comprehending the interplay between these factors. Furthermore, the cancer grade pertains to the appearance of cancer cells under a microscope and their potential for growth and spreading. As per the findings of the Cleveland Clinic (2022), the grading system considers the type of cancer, with higher-grade cancers typically being more aggressive and associated with a poorer prognosis compared to lower-grade cancers. The size of the primary tumor and the extent to which it has spread throughout the body determine the cancer stage. A widely used staging system is the TNM system, which considers three factors: tumor size and extent, lymph node involvement, and distant metastasis. The TNM system determines the stage of the disease, ranging from 0 to IV. Higher stages indicate a more advanced condition. Okay. The specific organ or tissue where cancer first develops, such as the breast, lung, or colon, determines the cancer type. Various forms of cancer exhibit distinct risk factors, symptoms, survival rates, and treatment options (Dolens et al., 2021).

Factors such as the grade, stage, and type of cancer can influence the prognosis and treatment options for patients. As an illustration, cancers of a higher grade typically exhibit more aggressiveness and necessitate more intensive treatment compared to cancers of a lower grade. According to Macmillan (2023), additionally, advanced-stage

cancers have a more unfavorable prognosis and may require more extensive surgical procedures, radiation therapy, or chemotherapy compared to early-stage cancers. Various treatments can elicit different responses and side effects in different types of cancer. Thus, it is crucial to customize the treatment plan based on the unique characteristics of each patient and their specific type of cancer.

This review aims to investigate the correlation between cancer grade, stages, and types and their influence on the prognosis and treatment of individuals with cancer.

The objectives of this review are:

- Provide an overview of the prevalence and patterns of cancer grades, stages, and types across various regions and countries.
- Examine the correlation between the severity, progression, and specific characteristics of cancer and how they impact the overall well-being and longevity of individuals affected by the disease.
- Analyze the efficacy and cost-effectiveness of various treatment options for different grades, stages, and types of cancer.

Methodology

The researchers established the parameters of a literature review, specifically targeting various stages, grades, and kinds of cancer. The exclusion criteria eliminated research conducted in languages other than English and those that were not relevant to the specified topic modalities. A dual-pronged strategy was employed, utilizing esteemed databases such as PubMed, Scopus, Web of Science, and Google Scholar. To improve the accuracy of their search, the researchers included specific keywords pertaining to each form of cancer, as well as the stage and grade of the disease. For instance, they included terms like "grading of cancer".

The screening and selection methods entailed a first evaluation of titles and abstracts to exclude research that lacked relevance. Subsequent to that, rigorous inclusion/exclusion criteria were employed to refine the selection. Thorough evaluations

of complete reviews of specific studies were performed, with careful documentation of the reasons for including or excluding them. The data extraction process prioritized essential factors such as research design, patient population, treatments, outcomes, and significant discoveries.

Each contributor was allocated a unique topic to focus on. After conducting a comprehensive analysis, the writers organized the gathered data into a PowerPoint presentation. The authors subsequently discussed and analyzed their findings in class about the several grades, stages and types of cancer.

Results and Discussion

Cancer develops when abnormal cells grow uncontrollably, and it can be classified into different stages, grades, and types based on various factors (What Is Cancer?, 2021). In this section, the different stages, grades, and types are extracted and discussed based from different credible articles found online.

A. Stages of Cancer

Cancer staging is a crucial aspect of cancer diagnosis and treatment. As stated by the National Cancer Institute (2022), it refers to the process of determining the extent of the cancer within the body, such as the size of the tumor and whether it has spread1. The concept of describing disease by stage or extent was introduced in 1929 by the League of Nation's World Health Organization2. In addition, According to Gress et al. 2018, The extent or stage of cancer at the time of diagnosis is a key factor that defines prognosis and is a critical element in determining appropriate treatment based on the experience and outcomes of groups of previous patients with similar stages. In addition, cancer stage often is a key component of inclusion, exclusion, and stratification criteria for clinical trials.

Furthermore, Staging is a common language developed by medical professionals to communicate information about a disease to others It provides a shorthand method for describing the disease, allowing electronic analysis of cases with similar

characteristics2. A short definition for staging is "the grouping of cases into broad categories based on extent of disease". As stated by Brierley et al. 2016 The key features of all cancers are the site of the tumour, the tumour profile (which includes histopathology, morphology, molecular, and genetic characteristic of the tumour), and the anatomic disease extent or tumour stage.

Liu et al. (2018) assert that the utilization of cancer staging serves the purpose of employing a standardized terminology to describe the scope of a cancer, recommending appropriate treatment strategies based on the size and dissemination of the disease, and potentially offering insights into a patient's prognosis. The process of staging plays a crucial role in the comprehensive assessment and management of solid tumors in cancer patients. The staging of nearly all cancers utilizes the tumor, node, and metastasis (TNM) method. In this approach, the main tumor extent is denoted by the letter T, the presence and extent of regional nodal metastases are indicated by the letter N, and the occurrence of distant metastatic cancer is represented by the letter M. The TNM categories are integrated to allocate stages ranging from I to IV, with IV representing the highest degree of advancement. The staging of most cancers is determined using the methodologies outlined in the staging handbook established by the American Joint Committee on Cancer.

The latter has been recognized for many years as an important determinant of prognosis for an individual cancer since patients who present with extensive disease almost universally have worse outcomes than those whose disease is much more localized. The classification of anatomic extent of disease, called 'the stage' is based on the TNM system first developed in Paris in the 1940's and 1950's by Pierre Denoix and the Union for International Cancer Control (UICC). In the TNM classification, T category describes the extent of the primary tumour, either by size, depth of invasion or invasion of adjacent structures, the N category indicates the absence or extent of regional lymph nodes metastasis, and the M category indicating the absence or presence of distant metastasis. The combination of TNM categories in a given tumour described at diagnosis before any treatment is applied is called clinical TNM or cTNM. After surgical

excision, the pathological TNM or pTNM classification is applied. The cTNM guides the approach to investigation and treatment, while the pTNM guides the use of adjuvant therapies. Both classifications give indications of prognosis (Sobin et al. 2011).

The extent of disease is a detailed description of how far the tumor has spread from the organ or site of origin (the primary site)2. Elements to be considered in any staging system are the primary tumor site, tumor size, multiplicity (number of tumors), depth of invasion and extension to regional or distant tissues, involvement of regional lymph nodes, and distant metastases2.

TNM Staging Classification: Clinical, Pathological, Posttherapy, Recurrence, and Autopsy

Stage may he defined at several time points in the care of the cancer patient. To properly stage a patient's cancer, it is essential to first determine the time point in a patient's care. These points in time are termed classifications, and are based on time during the continuum of evaluation and management of the disease. Then, T. N, and M categories are assigned for a particular classification (clinical), pathological, pest therapy, recurrence, and/or autopsy) by using information obtained during the relevant time frame, sometimes also referred to as a staging window. These staging windows are unique to each particular classification and are set forth explicitly in the following tables. The prognostic stage groups then are assigned using the T. N. and M categories, and sometimes also site-specific prognostic and predictive factors.

Among these classifications, the two predominant are clinical classification (i.e., pretreatment) and pathological classification (i.e., after surgical treatment).

Clinical Classification (CTNM)

Clinical stage classification is based on patient history physical examination, and any imaging done before initiation of treatment. Imaging study information may be used for clinical staging, but clinical stage may be assigned based on whatever information is available. No specific imaging is required to assign a clinical stage for any cancer site. When performed within this framework, biopsy information on regional lymph nodes

and/or other sites of metastatic disease may be included in the clinical classification, Clinical evaluation by physical examination often under-estimates the extent of cancer burden at the time of patient presentation. Although imaging is not required to assign clinical stage, clinical imaging has become increasingly important, and for many cancer sites, imaging is essential to stage solid tumors accurately. Imaging allows assessment of the tumor's size, location, and relationship to normal anatomic structures, as well as the existence of nodal and/or dis- tant metastatic disease. Computed tomography (CT) and magnetic resonance (MR) imaging are the most commonly used imaging modalities, although positron emission tomography (PET, often combined with CT), ultrasound, and plain film radiography also have important roles in various clinical situations. Thus, a new section was added to the disease site chapters to provide context-specific imaging information. To adequately and comprehensively communicate essential information, radiologists should use standardized nomenclature and structured report formats, such as these recommended by the Radiological Society of North America (RSNA) reporting nitrative (http://www.rsna.org/Reporting_ Initiative.aspx). In addition to providing key information for assigning the T, N, and M categories, clinical imaging is invaluable for guiding biopsies and surgical resections, later in the course of a patient's treatment, imaging also often plays an important role in monitoring response to treatment.

Pathological Classification (pTNM)

Pathological stage classification is based on clinical stage information supplemented/modified by operative findings and pathological evaluation of the resected specimens. This classification is applicable when surgery is performed before initiation of adjuvant radiation or systemic therapy.

Posttherapy or Post Neoadjuvant Therapy (ycTNM and ypTNM)

Stage determined after treatment for patients receiving systemic and/or radiation therapy alone or as a component of their initial treatment, or as neoadjuvant therapy

before planned surgery, is referred to as posttherapy classification. It also may be referred to as post neoadjuvant therapy classification.

Recurrence or Retreatment (rTNM)

Staging classifications at the time of retreatment for a recurrence or disease progression is referred to as recurrence classification. It also may be referred to as retreatment classification.

Autopsy (aTNM)

Staging classification for cancers identified only at autopsy is referred to as autopsy classification.

The objective of documenting the cancer stage

The UICC has established the objectives of documenting the stage at which a carcinoma is diagnosed. Medical practitioners attending to individuals with cancer acknowledge the criticality of precisely determining the cancer stage during diagnosis in order to assess the patient's prognosis and determine the most appropriate course of treatment. Moreover, they understand that it is crucial to determine the stage of the malignancy before initiating the use or evaluation of evidence-based medicine and treatment guidelines or enrolling patients in clinical trials. However, doctors often overlook the importance of incorporating documented stages in cancer control efforts. Accurate documentation of the stage of cancer and its registration in cancer registries allows for evaluating the frequency of the disease in a community. Integrating stage data into the analysis of cancer rates in a particular area significantly improves the usefulness of the information for assessing the impact of cancer and supporting the development of cancer programs focused on screening and treatment. The requirements of a cancer control program significantly differ according to whether there is a prevalence of localized or early-stage disease or advanced or late-stage disease. When a significant proportion of the population consists of individuals in the first phases of the illness, there is an increased

need for diagnostic services, surgical procedures, and radiation therapy. When the population consists of persons with metastatic disease, the primary emphasis is on allocating resources towards palliative and supportive treatment.

Cancer stages

Stage 0

Stage 0 cancer, also known as carcinoma in situ, is the presence of abnormal tissue that has not metastasized to other body parts, as verified by a medical professional. The National Cancer Institute often employs the term "carcinoma in situ" to denote this particular stage, as stated by medical professionals. The determination of stage 0 cancer relies on the exact site and diagnostic technique the healthcare practitioner employs. Currently, the aberrant cells do not exhibit the characteristics of malignancy; nonetheless, if left untreated, they can transform into malignant cells. The outlook for stage 0 tumors is typically positive, although it can vary depending on the specific form of cancer. It is crucial to note that stage 0 breast cancer has a 99% survival rate during a five-year timeframe.

Stage 1

Stage 1 represents the initial phase of cancer advancement. The tumor is typical of diminutive dimensions and has not exhibited any metastasis to adjacent tissue or lymph nodes. Stage 1 cancer denotes the initial phase of cancer, typically marked by a comparatively higher likelihood of survival in comparison to the later stages of cancer.

Stage 2

Stage 2 cancer denotes the presence of a tumor that has had modest growth and has extended into adjacent tissues. The diagnosis of cancer is contingent upon the specific type of cancer that an individual is afflicted with. The cancer is currently confined to a specific area, but there is a possibility of its metastasis to adjacent tissue or lymph nodes. The prognosis for an individual diagnosed with stage 2 cancer is contingent upon

several factors, including age, overall health status, and the specific type of cancer. Stage 2 cancer typically exhibits favorable treatment outcomes and is frequently associated with a substantial probability of long-term survival.

Stage 3

In the context of stage 3 cancer, Stage 3 cancer is distinguished by the presence of a tumour that is confined to a specific location but is typically bigger when compared to stages 1 or 2. Furthermore, it has infiltrated adjacent tissue. Furthermore, it can impact adjacent lymph nodes. The diagnostic criteria for cancer are contingent upon the specific type of cancer that an individual is afflicted with. Medical experts have determined that the likelihood of survival for stage 3 cancer is generally lower compared to malignancies detected at stages 1 or 2. Various factors, including an individual's overall health, age, and other pertinent criteria, influence their chances of survival.

Stage 4

Stage 4 signifies the apex of cancer's advancement, distinguished by its advanced state and seriousness. Stage 4 cancer is typically characterized by substantial tumor size and the metastasis of cancer cells to several organs. Nevertheless, it is well acknowledged that Stage 4 cancer often carries a less favorable prognosis when compared to previous stages of cancer. The likelihood of an individual's survival depends on several factors, including their age, specific type of cancer, and overall health status.

B. Grades of Cancer

According to the National Institute of Cancer, tumor grade refers to the morphological characteristics of cancer cells as observed under a microscope, indicating their level of normality or abnormality. The degree of resemblance to normal cells directly correlates with the aggressiveness of the cancer, as well as its rate of growth and metastasis. Conversely, the greater the abnormality of the cells, the more

aggressive the cancer becomes, leading to a higher likelihood of rapid growth and dissemination.

Tumor differentiation plays a crucial role in assessing the tumor's propensity for growth and metastasis. The procedure commences with the acquisition of a tumor biopsy from a patient, followed by the preparation of samples using either formalin-fixation paraffin embedding (FFPE) or freezing in liquid nitrogen. Afterwards, the samples are divided into sections and subjected to staining, enabling the oncologist to evaluate the dimensions, morphology, and arrangement of the malignant cells using a microscope (BioChain Institute Inc., 2023).

Tumor grading is very crucial in for making treatment decisions and prognostic evaluation. There are several different systems used in grading cancer, each with its own specific criteria and methods of classification. Three widely used grading systems in cancer are the Gleason score for prostate cancer, the Nottingham Histologic Grading System for breast cancer, and the World Health Organization (WHO) grading system for various cancers.

The Gleason grading system is a reliable indicator of the likelihood of survival in males diagnosed with prostate cancer (PCa) (Andrén et al., 2006). The Gleason system, which was first introduced in 1974 by Gleason and Mellinger, is an architectural grading system that spans from 1 (indicating well differentiated) to 5 (indicating badly differentiated). The Gleason score (GS) is calculated by adding the major and secondary patterns, resulting in a numerical value between 2 and 10. It has been widely recognized that patients with a Gleason score of 7 or higher are more likely to experience extra prostatic extension and biochemical recurrence (D'Amico et al., 1998).

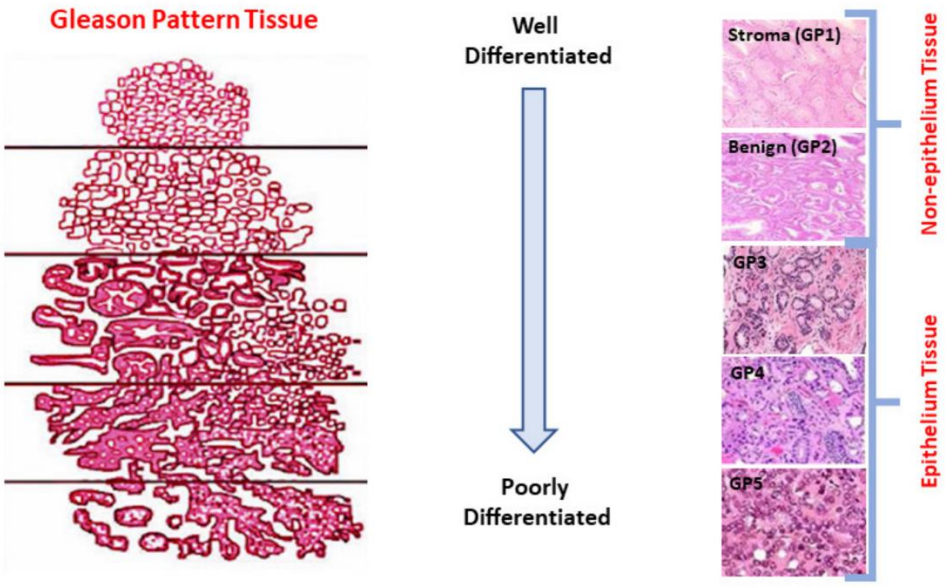

Figure 1. Illustration showing the types of Gleason Pattern (GP), which GP goes from GP1 (stroma) to GP5 depending on the cell differentiated. (Adapted from Hammouda *et al*., 2022)

According to Hammouda *et al*. (2022) the GSG consists of the Gleason score (GS) and Gleason pattern (GP), which describe the diverse tumor development patterns detected in a biopsy and indicate the level of differentiation of these tumors. Essentially, the GP ranges from GP1 to GP5. The non-epithelial tissue is denoted by GP1 (stroma) and GP2 (benign), whereas the epithelial tissue is distinguished by GP3, GP4, and GP5 (**see figure 1**). Hence, it is essential to recognize the basic rules of the modified Gleason system, as well as the differences in reporting on different types of samples. In needle biopsies, according to Chen and Zhou (2016), it is crucial to include any detectable high-grade component in the Gleason score, as it signifies a strong likelihood of discovering a substantial high-grade tumor in the prostate. Conversely, patterns of inferior quality that make up less than 5% of the tumor should be disregarded (according to the 5% cut-off criterion). Aside from the fundamental process of combining the main and secondary patterns to determine the Gleason score, it is important to note that if a tertiary component (which represents the smallest proportion when three patterns are present) is found and is of the highest grade in a needle biopsy, it should be considered as the second grade.

Another grading system use to grade cancer is the Notthingham histological grading for breast cancer. An evaluation of the degree of aggressiveness that breast tumors exhibit can be accomplished through the use of a standardized approach known as the Nottingham histologic score. Tumor formation, nuclear pleomorphism, and mitotic activity are the three unique measurements that are included in the formulation of the evaluation (Cancer Resources from OncoLink, Treatment, Research, Coping, Clinical Trials, Prevention, 2021).

According to Takahashi et al. (2020), a score ranging from one to three is awarded to each characteristic, with one indicating the degree of abnormality that is the most extreme and three indicating the degree of normalcy that is the closest to the norm. Grade I is awarded for a total score that ranges from three to five, which indicates a well-differentiated performance; Grade II is awarded for a total score that ranges from six to seven, which indicates a moderately differentiated performance; and Grade III is awarded for a total score that ranges from eight to nine, which indicates a poorly differentiated performance. The overall score is broken down into these three grades. Grade I cancers are less aggressive and have a larger possibility of being estrogen receptor-positive, whereas Grade III tumors are more aggressive and have a greater tendency to be "triple-negative," which means lacking hormone and HER2 receptors. Grade I tumors are more likely to be estrogen receptor-positive.

According to the National Cancer Institute (2022), a tumor grade is determined by conducting a biopsy and examining it under a microscope. The pathologist provides a comprehensive account of the observations made in a pathology report, which further encompasses pertinent information pertaining to your diagnosis. The pathology report may refer to cells exhibiting a greater degree of normalcy as well-differentiated. Cells that exhibit a less typical appearance may be referred to as poorly differentiated or undifferentiated. Based on these and other morphological characteristics observed through microscopic examination, the pathologist will assign a numerical value to denote the grade (Tumor Grade, 2022).

Additionally, the classification systems utilized for characterizing tumor grade may vary depending on the specific cancer type. However, the majority of cancers are classified into grades X, 1, 2, 3, or 4.

- Grade X: Grade cannot be assessed (undetermined grade)
- Grade 1: Well-differentiated (low grade)
- Grade 2: Moderately differentiated (intermediate grade)
- Grade 3: Poorly differentiated (high grade)
- Grade 4: Undifferentiated (high grade)

C. Types of Cancer

Cancer has different types. Carcinoma, sarcoma, leukemia and lymphoma are the main types of cancer.

Carcinoma

As stated by Hinck and Näthke (2014), Carcinoma is a malignant tumor or cancer of the body's internal or exterior lining, specifically the epithelial tissues, and almost 90 percent of all cancers in humans are carcinomas. Epithelial tissue can be found all over the body and acts as a barrier between the internal and external surfaces. It can be found in the skin and the coverings and linings of organs such as the prostate, breast, colon, pancreas, and lungs, and interior passageways like the gastrointestinal tract. Epithelial cells have the unique ability to secrete fluids in a polarized pattern. As aforementioned, cancers typically arise in epithelial tissue, when a cancer expands, there is typically an increase in the instability that characterizes the original cell and tissue arrangement of epithelia. As stated by D'Orazio et al. (2013), Carcinoma develops because of too much exposure to sun or UV radiation. There are five common types of carcinomas: adenocarcinoma, basal cell carcinoma, squamous cell carcinoma, and transitional cell carcinoma.

Adenocarcinoma is a cancerous tumor that develops from the glandular epithelial cells of the gland or structures. (Mullangi, 2023) Tissues are kept moist by the fluids produced by glandular cells. Adenocarcinoma potentially arises in the various parts of the body. Multiple regions of the body might be affected by adenocarcinoma, including the esophagus, colon, rectum, pancreas, breasts, prostate, and lungs. (Mitra et al., 2018) According to Alberg AJ & Samet JM (2003) as stated by Mullangi (2023), with over 40% of cases, adenocarcinoma is by far the most common histologic form of lung cancer. Patients who are male are significantly more likely to experience it, although it also happens sometimes to women who are also quite young and to those who have never smoked. Siegel RL, (2020) states that among all cancers, breast cancer is by far the most prevalent specifically in females. Breast cancer risk factors include alcohol use, experiencing an excess of estrogen in some situations (such as nulliparity), having a child at a late age, beginning menstruation at a young age, or being exposed to estrogen from outside sources. As cited by Nicolosi P. et al., (2019) as stated by Mullangi (2023), aging is the most significant factor in the development of prostate cancer. Thus, only a few patients will receive a clinical diagnosis of prostate cancer prior to the age of 40. In addition to a personal or family history of prostate cancer, other risk factors include smoking cigarettes and germline mutations (BRCA2/1 and ATM). According to Burt RW. et al., (1995) as stated by Mullangi (2023), when it comes to males, colorectal tumors rank third, whereas in females they rank second. The incidence of colorectal cancer occurs among people older than 50. Tobacco usage, alcohol use, inflammatory bowel disease, consumption of processed and red meat, and a personal or family history of these conditions all count as risk factors. Up to 10% of those who get pancreatic cancer have a family history. Risk factors for pancreatic adenocarcinoma in the environment include cigarette smoking, elevated fasting plasma glucose, obesity, Western diet, coffee, alcohol, and aspirin usage over an extended period of time, which stated by Schernhammer ES. et al., (2004) and cited by Mullangi (2023). Patients with cystic fibrosis with an ABO blood type are at a two to five-fold increased risk of developing pancreatic cancer and other gastrointestinal cancers. An estimated of 11% to 32% of all

pancreatic cancer fatalities are attributed to smoking, and the risk of adenocarcinoma of the pancreas rises significantly with cigarette consumption. In addition, gastric adenocarcinoma, GERD, and esophageal adenocarcinoma are all associated with H. pylori, which is another key risk factor. (Mullangi, 2023)

Basal cell carcinoma (BCC) is the most prevalent skin cancer worldwide. BCC develops in the basal cells that line the deepest layer of skin cells. BCC appears as a pink- or flesh-colored papule or nodule that has surface telangiectasia. Primary environmental risk factor is UV radiation. BCC arises on damaged skin; it sometimes appears on mucous membranes, palms, or the soles of the feet. Most basal cell carcinomas are locally invasive and develop slowly. Blindness may result from tumors that grow in the area surrounding the eyes and nose. (McDaniel, 2022)

Squamous cell carcinoma (SCC) as stated by Howell (2023), it is the second most prevalent skin cancer globally. Cumulative exposure to ultraviolet (UV) solar radiation over a lifetime is a key component in the development of cutaneous squamous cell carcinoma, caused mainly by sun exposure. SCC typically affects men with fair skin and light eyes who have been exposed to UV solar radiation in the past and tend to emerge in sun-exposed regions of the body after the age of 50. SCC most commonly affects the face, neck, bald head, dorsal hands, extensor forearms, and shins.

Transitional cell carcinoma (TCC), also called urothelial cell carcinoma (UCC) is the most common primary tumor of the urinary bladder, typically develops in the inner lining of the urinary system and includes cancer in the renal pelvis, ureters, and bladder. It may appear as lumps that emerge into the bladder lumen or in the form of specific areas of thickening of the bladder wall. TCC does not cause any noticeable symptoms and typically grows slowly. Its cells can stretch as an organ expands. Some symptoms of TCC include painful urination, blood in the urine, fatigue, and weight loss. The major risk factor of transitional cell carcinoma is smoking, obesity, and old age, and is common to males (Purkayastha et al., 2017).

Sarcoma

Sarcomas are a wide range of malignant tumors that arise from the mesodermal tissue, particularly the connective tissue. (Ceyssens & Stroobants, 2011) Sarcomas are extremely uncommon tumors, making up about 20% of childhood malignancies and less than 5% of adult neoplasms. There is a wide variety of sarcomas in terms of their histology. While the exact origins of certain sarcomas are still unknown, others seem to originate from normal connective tissues such as bone, cartilage, fat, or muscle. The primary cause of sarcomas seems to be not inherited from parents but arises via a mutation. Mackall et al. (2002) In the study of Palmerini et al. (2012), Individuals are potentially prone to develop sarcomas if they work in certain industries or are exposed to certain chemicals, such as herbicides and chlorophenols. Sarcoma risk factors may also include maternal and paternal traits including age, smoking status, and job, as well as any health issues that either of the parents may have had while pregnant. There are two main categories of sarcoma: soft tissue sarcomas (STSs) and bone sarcomas. Both categories include a wide range of histological subtypes, and the number of subtypes that can be understood at the molecular level is growing rapidly.

As cited by Lyu et al, (2019) stated by Grünewald et al. (2020), Soft tissue sarcomas (STSs) are the most common uncommon malignancies. However, they only make up less than 1% of all cancers. Depending on the stage of the disease and the intricate interaction between the anatomical site and STSs subtype, the projected 5-year survival rate for STSs might range from approximately 57% to 62%. According to Lanzkowsky (2011), STSs are a diverse collection of malignant tumors that originate from early mesenchymal cells. These malignancies originate in vascular, connective, supportive tissue, and muscle. They like to cluster in areas where they have already caused damage and are extremely invasive there. Typically, they spread to other parts of the body through the bloodstream. However, Metastasis typically occurs through the bloodstream and, less frequently, through the lymphatic system. Soft tissue sarcomas tend to be more common in infants and toddlers up to about the age of five. According

to Burningham et al. (2012), The occurrence of soft tissue sarcomas is lowest in young individuals, but it grows gradually until the age of 50. The prevalence of soft tissue sarcomas is most common in people aged 50 and up. Some of the major subtypes of STSs are Fibrosarcoma, Gastrointestinal Stromal Tumors (GIST), Leiomyosarcoma (LMS), Liposarcoma (LPS), Rhabdomyosarcoma (RMS), Undifferentiated pleomorphic sarcoma (UPS), and Synovial sarcoma (SS).

A fibrosarcoma is a malignant tumor made up of fibroblasts that produce collagen at varying levels. This kind of cancer of the soft tissues is extremely rare and aggressive. It has a low incidence rate compared to other tumors, but it spreads rapidly and kills healthy tissues, making it a serious threat. Although malignancy often starts in soft tissues like fascia and tendons, it can also develop in bones, either as a main tumor in the medullary canal or a secondary tumor embedded in the periosteum. Fibrosarcoma of the bone can develop in patients who have already suffered bone injury, in the form of trauma or radiation treatment. Fibrosarcoma in adults often affects middle-aged and elderly people; it is extremely rare in adolescents. (Davis, 2023)

Gastrointestinal stromal tumors are benign over 70% and arise from neoplastic development involving cells from the interstitial cells of the Cajal lineage; these tumors are most usually caused by mutations in genes affecting tyrosine kinase expression. There are several possible characteristics of gastrointestinal stromal tumors. The most common symptom seen by individuals with these tumors is bleeding in the gastrointestinal tract. This bleeding can be sudden and accompanied by hemorrhage or hematochezia, or it can be chronic and cause anemia and complications. Symptoms of a tumor's mass effect, such as abdominal pain or discomfort, early satiety, abdominal distension, or a palpable mass, might accompany gastrointestinal bleeding in GISTs. Although they only make up a small percentage of gastrointestinal malignancies (0.1–3%), these tumors are the most prevalent type of mesenchymal tumors found in the GI tract. However, GISTs can develop at any age; the median age of diagnosis is in the 60s, suggesting that most diagnoses occur later in life. (Burch, 2022)

Leiomyosarcoma (LMS) accounts for 10–20% of all sarcomas and is among the most prevalent subtypes of STS. Complex genetic defects cause LMS to be relatively susceptible to treatment. No specific cause has been identified as the fundamental cause of LMS. An additional risk factor for STS is a history of radiation therapy (RT), which might cause LMS. In addition to other STS, LMS can occur in patients with genetic diseases such as hereditary retinoblastoma (RB1 gene deletion) and Li-Fraumeni syndrome (TP53 gene mutation). While it accounts for 10–15% of all sarcomas linked with the limbs, it is more prevalent in the retroperitoneum, uterus, vast blood arteries, and abdomen. Considering the limbs, LMS is more prevalent on the thighs. Regardless of its cause, LMS histologically displays eosinophilic cytoplasm, elongated, hyperchromatic nuclei, and fascicles of spindle cells that connect abruptly. This disease is more commonly seen in the elderly, and its severity typically increases after the age of 70. Nonetheless, uterine LMS can begin as late as the third decade of life, with the highest prevalence seen in women in their perimenopausal years, which is the fifth decade of life. Contrary to popular belief, men are more likely to experience cutaneous and non-cutaneous soft-tissue LMS, while women are more likely to experience retroperitoneal and LMS associated with blood vessels. (Mangla, 2022)

Rhabdomyosarcoma (RMS) develops from an early mesenchymal cell and is a malignant soft tissue sarcoma in children with a skeletal muscle phenotype. Diagnoses show that it is most common in younger children (less than 6 years old). Factors that increase the likelihood of rhabdomyosarcoma include exposure to radiation when pregnant, rapid growth while still in the womb, parents' socioeconomic position, and the use of recreational drugs by the parents. With a small male predominance (M/F, 1.3:1), rhabdomyosarcoma accounts for 50% of pediatric soft tissue sarcomas and 3% of childhood cancers, making it the most frequent soft tissue sarcoma in children and adolescents. Infiltrative masses that are white, soft, or firm, and poorly circumscribed are the most common gross appearances of these tumors. Rhabdomyosarcoma symptoms might appear in a variety of ways, depending on several variables such as the location of

the tumor, the patient's age, and whether or not the cancer has spread to other parts of the body. A patient may notice the gradual enlargement of a localized, painless tumor in the region of their head or neck. (Kaseb, 2022)

Undifferentiated pleomorphic sarcoma (UPS), formerly called malignant fibrous histiocytoma classified as a high-grade aggressive soft-tissue sarcoma. The tumor is likely developed from mesenchymal stem cells rather than histiocytes, as was previously believed. Metastasis to other organs is possible, and it can impact bones, soft tissues, and the retroperitoneum. It was initially believed to be the most prevalent soft-tissue sarcoma (STS) in adults, according to the reports. UPS typically appears as a small, seemingly harmless lump under the skin that is expanding quickly and causes no symptoms. A mass effect and/or constitutional symptoms may be shown by an intraabdominal, intrathoracic, or internal UPS. UPS was the second most frequent STS, after leiomyosarcoma. White males were more affected than Black males, and the incidence rates were much higher in males than in females. Also, the number of cases increased exponentially with age, reaching its highest point in the sixth decade of life. (Robles-Tenorio, 2023)

Synovial sarcoma (SS) is a type of tumor that arises from mesenchymal cells and displays certain characteristics of epithelial cells. It constitutes approximately 10% of all soft tissue sarcomas and is frequently observed in older children and younger adults. Synovial sarcoma is the most recognized type of sarcoma associated with translocations, and many molecular approaches are employed to identify this specific genetic rearrangement. This malignancy is highly aggressive and has a significant propensity for metastasis. Synovial sarcoma is not influenced by any environmental or hereditary factors. The subtype of SS can be classified into two main categories: monophasic and biphasic. The monophasic subtype of this condition may appear as either the more common spindle cell type or the rarer and often overlooked epithelial form. The biphasic subtype comprises a combination of fibroblast-like spindle-shaped cells and epithelial cells. In addition, there have been reports of infrequent occurrences of poorly

differentiated (round cell), ossifying, and myxoid subtypes. Synovial sarcoma (SS) may occur in various forms, which might complicate the diagnostic process and necessitate the expertise of a pathologist who specializes in the study of sarcoma tissue. Synovial sarcoma typically originates from the deep soft tissues of the limbs. Sebaceous cysts occur seldom in the trunk, thoracic, and neck areas. Sjögren's syndrome (SS) has occasionally been documented to originate from the pleuropulmonary, heart, gastrointestinal (GI) tract, and other bodily organs. Typically, in severe cases, the patient exhibits a progressively growing mass that is deeply embedded, firm in texture, and usually slightly mobile inside the muscle (unless it is attached to the bone or fascia). The mass is not painful. In addition to these discoveries, the rest of the historical information is generally ordinary. In individuals with visceral SS, symptoms typically manifest in the specific organ that is affected. For instance, patients who have prostate involvement experience urine retention, whereas those with lung involvement exhibit symptoms that resemble pneumonia, chest discomfort, or pulmonary embolism. (Mangla, 2023)

Bone sarcomas, often referred to as sarcomas of the skeleton, is a very rare type of cancer that makes up a small proportion of all cancers. Besides they are less prevalent compared to malignant soft-tissue tumors. According to Burningham et al. (2012), As their names suggest, malignant bone tumors can develop anywhere in the body's skeletal system, including cartilage. In some cancer patients, secondary sarcoma has been found to develop because of radiation exposure following radiation therapy. The cumulative radiation dose to the bone is inversely related to the probability of malignant bone cancers. Some common major subtypes of Bone sarcoma are Osteosarcoma (OS), Ewing sarcoma (EwS), and Chondrosarcoma (CHS).

Osteosarcoma develops from simple mesenchymal cells that produce osteoid, and it is the most common primary bone cancer in children. It makes up around 20% of all primary bone tumors and can be either primary (with no underlying bone pathology) or secondary (with underlying pathology that has undergone malignant degeneration or conversion). The metaphysis of the long bones of the appendicular skeleton is a common

location for osteosarcoma to develop. The femur (42%), tibia (19%), and humerus (10%) are the most prevalent sites, with 75%, 80%, and 90% of tumors, respectively, located in the distal and proximal parts of the blood vessels of these bones. Both the pelvis and the skull or jaw are other possible locations, accounting for 8% and 8%, respectively. As a result of its extremely variable presentation, osteosarcoma can be subdivided into various subtypes based on differentiation level, bone site, and histological features. Imaging appearance, demographics, and biological behavior can vary among these subtypes. Osteosarcoma symptoms might linger for weeks or months before people reach out for help. Bone pain is one of the common indicators (Prater, 2023).

According to Burchill (2003), Ewing sarcoma is the second most prevalent malignant bone tumor that affects adolescents and young adults, constituting 10-15% of all primary bone tumors. The yearly occurrence rate is roughly 0.6 per million individuals in the entire population, and it typically happens throughout the age range of 10 to 20 years. Ewing's sarcoma has the potential to impact any bone, although it most frequently occurs in the lower limb (45%), followed by the pelvis (20%), upper extremity (13%), axial skeleton and ribs (13%), and face (2%). The number is 6. The femur is the bone most impacted, with the tumor typically originating in the middle section of the bone. In the study of Durer (2022), Ewing sarcoma is a type of tumor that consists of small round cells with a higher ratio of nucleus to cytoplasm. It belongs to a group of childhood tumors known as small round blue cell tumors, which include retinoblastoma, neuroblastoma, rhabdomyosarcoma, and nephroblastoma. Ewing cells exhibit little cytoplasm that is rich in glycogen, which may be easily identified using periodic-acid-Schiff staining. Individuals diagnosed with Ewing sarcoma may have specific symptoms, including pain, rigidity, or inflammation, which persist for a duration of many weeks or months. Over 50% of individuals diagnosed with ES experience sporadic discomfort that intensifies throughout the nighttime. Ewing sarcoma can manifest in diverse anatomical sites with varied clinical manifestations. It is typically located in the shaft of long bones. Pathological fractures can occur when there are bone lesions or metastatic lesions in the long bone. ES might

manifest as back pain in the pelvic region. Systemic signs, such as fever and weight loss, frequently suggest the existence of metastatic disease. Approximately 20% of patients exhibit metastatic disease upon diagnosis, and within this subset, over 20% demonstrate involvement of the lungs or pleura.

Chondrosarcomas are malignant tumors that originate from cartilage and display a wide range of physical characteristics and clinical patterns. They constitute approximately 20% of all primary malignant bone tumors. Typically, they originate in the pelvic area or the bones that are lengthy in shape. Chondrosarcomas are typically enormous tumors, typically exceeding 4 cm in size. Their surface is translucent and has a lobular appearance, with a color that can be described as blue-grey or white. This color is due to the presence of hyaline cartilage. There could exist regions characterized by the presence of myxoid or mucoid substances and the occurrence of cystic alterations. Mineralization often manifests as yellow-white chalky regions with calcium deposits. Visible erosion and damage can occur in soft tissue. (Limaiem, 2023) In terms of bone sarcomas, chondrosarcoma (CHS) ranks second, closely followed by osteosarcoma. Among the many types of aggressive and cancerous bone tumors, CHSs are among the most diverse. It is a collection of malignant tumors that share the characteristic of producing a cartilaginous matrix, along with other traits that are clinically and morphologically unique. Roughly 27% of bone cancer cases are CHS patients. It is the most common type of bone tumor in those over the age of 30, with more than 70% of cases being detected in people over the age of 40. Although it affects a small percentage of young adults and children, CHS accounts for just 3% of bone cancers in this age group. (Zając et al., 2021)

Leukemia

Leukemia was first identified in the mid-19th century when different researchers described a common pathology caused by abnormalities of the white blood cells, hence the term “Leukemia” which originates from the Greek words “Leuko” means white and

"Haema" which means blood (Polychronakis et al., 2013b). Usually immature, these aberrant white blood cells also referred to as leukemia cells can burden the bone marrow, which lowers the production of healthy red blood cells, platelets, and white blood cells. Leukemia is characterized by the presence of these defective leukocytes, which is essential for both diagnosis and categorization. According to Shah et al. (2021), the Leukocytes, commonly known as WBCs (white blood cells) are a prime component of our immune system that protects the human body from viruses, infections, bacteria and other foreign bodies. These nucleated cells are formed in the bone marrow and circulate through the bloodstream, so they can be found throughout the lymphatic system. Leukocytes differ from the other blood cells such as red blood cells and platelets and therefore are majorly classified as either acute or chronic based on the rapidity of proliferation and either as lymphoid and myeloid. The cancerous production of abnormal and immature leukocytes affects the immune system leading to the reduced ability of bone marrow to produce RBCs and platelets (American Society of Hematology, n.d.). As it is crucial to maintain a required level of leukocytes in the blood, hence complete blood count i.e. CBC is often an indicator of disease. The causes of leukemia have not been known precisely perhaps due to the inherited and environmental factors. However, the diagnosis of leukemia at an earlier stage is mandatory as the abnormal leukocytes rapidly spreads through the blood stream and affects the other body organs (Harvard Health, 2014). The types or classes of leukemia depends upon the type of affected leukocytes. According to Butcher (2015) if the immature leukocytes are lymphocytes, then leukemia is classified as Lymphocytic Leukemia, and if the immature leukocytes are monocytes and granulocytes then it is considered as myelogenous Leukemia. In general, leukemia can be categorized as acute (when affected leukocytes are unable to perform as normal leukocytes) or chronic (when affected leukocytes can perform as normal cells), making chronic leukemia extreme (Ahmed et al., 2019). There are four subtypes of leukemia, Acute Lymphocytic Leukemia (ALL), Acute Myeloid Leukemia (AML), Chronic Lymphocytic Leukemia (CLL), and Chronic Myeloid Leukemia (CML) (Patel & Mishra, 2015).

Leukemia is among the most prevalent tumors that strike people of all ages. Even with notable advancements in the management of acute leukemias, the underlying etiology still remains uncertain. In the study of Fathi et al., the incidence of leukemia in the northwest of Iran (Ardebil) was found to be directly correlated with various factors, including blood type, family history of cancer, use of medication during pregnancy, radiation history, parental smoking, residence less than 500 meters from high-pressure electric lines, and exposure to electromagnetic fields greater than 0.45 micro-Tesla. In another study of Tebbi (2021a), it has been also concluded that undoubtedly genetics, exposure to infections, environment and occupations, age and race, as well as exposure to radiation have a major role in the development of leukemia.

Epidemiological studies have highlighted the incidence and prevalence of different leukemia subtypes across diverse populations. A study published in Experimental Hematology & Oncology in 2020 analyzed the incidence trends of leukemia types at the global, regional, and national levels between 1990 and 2017. The study reported a significant decrease in leukemia incidence during this period, while the incidence of both acute myeloid leukemia (AML) and chronic lymphocytic leukemia (CLL) significantly increased in most countries (Dong et al., 2020b). An additional study that was released in 2022 provided information about the four primary subtypes of leukemia and its worldwide burden. It highlighted that leukemia is more common in men and that the disease's conditions are improving, with the largest average annual percentage change (AAPC) value varying by geographic region. Furthermore, a study published in Scientific Reports in 2019 revealed an emerging trend of a rapid increase in leukemia, particularly myeloid leukemia and lymphocytic leukemia, in the aging population in the United States. Additionally, a global analysis of leukemia burden, risk factors, and trends, published in 2022, found a disparity in the distribution of leukemia across different regions, with the highest incidence reported in North America, Australia, New Zealand, Western Europe, and Northern Europe (Huang et al., 2022). These studies collectively demonstrate the dynamic nature of leukemia incidence and its varying trends across different populations

and geographical regions, providing valuable insights for guiding clinical practice and furthering scientific research.

Lymphoma

Lymphoma is a type of cancer that starts in the lymphatic system, which is a part of the immune system that produces lymphocytes, or white blood cells, that fight off pathogens, bacteria, and other harmful substances. Hodgkin's lymphoma and non-Hodgkin's lymphoma are the two primary forms of lymphoma. Reed-Sternberg cells are an indicator of Hodgkin's lymphoma whereas non-Hodgkin's lymphoma does not include these cells. According to Momotow et al. (2021), Hodgkin lymphoma (HL) is a rare lymphatic system tumor that is one of the most prevalent malignancies in young individuals. The condition is distinguished by a low number of malignant cells derived from B-lymphocytes, as well as an extensive inflammatory microenvironment, are present. This distinct histological appearance and its etiology remain poorly understood. Epstein-Barr virus (EBV) infection must be treated in some people considered to be a factor in pathogenesis. Certain genetic variables and HIV infection have been identified as risk factors on their own (Kowalkowski et al., 2013b). The annual incidence of Hodgkin lymphoma is 2-3 per 100,000 people. There is a second peak in the age group over 60 years old in addition to the illness peak that occurs in the third decade of life (Storm et al., 2010). Many variables appear to be favorable for HL to arise. The markedly elevated likelihood of identical twins strongly suggests that heredity plays a part in HL. In the study of Clarke et al. (2005) stating that two polymorphisms in the genes controlling immune processes are linked to a higher risk of HL. As stated by Biggar et al. (2006), people who are HIV-positive often have a higher chance of acquiring HL. Since Highly Active Anti-Retroviral Therapy (HAART) has improved immunological competence, the prevalence of HIV-associated HL has increased, highlighting the pathogenetic importance of the inflammatory environment. On the basis of histopathology, 95% of HL cases that are classified as cHL comprises the subtypes nodular sclerosing, mixed cellularity, lymphocyte-rich, and lymphocyte-depleted HL . The diagnosis of NLPHL occurs in 5% of cases (Küppers et al., 2012). In NPLHL,

the malignant cells are known as lymphocyte predominate (LP) cells, but in cHL, CD30-expressing Hodgkin and Reed-Sternberg (HRS) cells are present, encircled by a range of inflammatory cells. They do not have CD30 and are positive for CD20 and mature lymphocytes envelop these cells.

Over the past few decades, the therapy of HL has evolved, significant progress has been achieved in the treatment of patients suffering from Hodgkin lymphoma (HL). Consequently, HL has changed from being a frequently fatal disorder to one of the few malignancies that is now highly curable. These include the emergence of more precise radiotherapy, efficient multiagent chemotherapy, immunotherapy, improved staging procedures, and significant advancements in supportive measures for myelosuppression and infectious and other complications as stated by Klimm (2005). This is especially true for patients whose disease is in its early stages, but today's disease control rates also surpass 70% for patients who present with high-risk features. Unfortunately, increased risks of infections, cardiovascular disease, cerebrovascular disease, and secondary primary cancers have cast a shadow over this therapeutic success for long-term HL survivors (Swerdlow et al., 2007).

Non-Hodgkin Lymphoma on the other hand, is a malignant disease originating from immune system cells, non-Hodgkin lymphomas primarily present as solid tumors or lymphadenopathy. It is a complicated and dynamic disease, with over 50 distinct subtypes listed in the most recent World Health Organization classification. There are many subtypes of non-Hodgkin lymphoma (NHL), the most prevalent hematologic cancer. The cause of this disease is not fully known, and mounting data points to the possibility that risk factors differ depending on the NHL subtype. However, it has been difficult to investigate subtype-specific concerns due to a small number of instances. Thus, the NHL Subtypes Project was launched by the International Lymphoma Epidemiology Consortium, an international cooperative endeavor to look for NHL subtype etiologies.

According to Jemal et al. (2011) the most prevalent hematologic malignancy, non-Hodgkin lymphoma (NHL), is diagnosed in over 500000 people worldwide each year. The several closely related but diverse illnesses that make up NHL each have unique morphologic, immunophenotypic, genetic, and clinical characteristics (S. H. Swerdlow et al., 2016). Severe immunodeficiency is the strongest known risk factor for various NHLs, although it only explains 4% of cases as per stated by Bouvard et al. (2009). Throughout the second half of the 20th century, the incidence of NHL increased sharply in the majority of Western countries, regardless of the AIDS epidemic, which seems to have reached a standstill in the past ten years (Hartge & Devesa, 1992). The "epidemic" of NHL is still poorly understood, despite a number of epidemiological studies being conducted in the 1980s and 1990s to try and understand the broader etiology of NHL and find possible causes of these long-term increases.

Conclusion

Cancer is a complex disease that occurs when cells in the body begin to divide uncontrollably, forming a mass known as a tumor. This abnormal growth can invade nearby tissues and spread to other parts of the body. Understanding about the different stages, grades, and types of cancer may help every individual to prevent this disease as early as it can be, and understand the risk factors of a certain cancers. As well as for patients to better understand their condition, make informed decisions about treatment options, and manage their expectations for recovery. Cancer staging refers to the process of determining how advanced a cancer is and how much it has spread within the body. The most widely used staging system is the TNM system, which stands for Tumor, Node, and Metastasis. This system assigns a stage to a cancer based on the size of the primary tumor, the presence and extent of regional lymph node involvement, and whether the cancer has spread to distant organs or tissues. Cancer stages range from Stage 0 (the earliest stage) to Stage IV (the most advanced stage). Cancer grades describe the level of differentiation or how similar the cancer cells are to normal cells. Grading is typically performed after a biopsy or surgical removal of the tumor. Pathologists analyze

the cells under a microscope to determine the grade, which can be low, intermediate, or high. A higher grade indicates that the cancer cells are less differentiated and more aggressive. Different types of cancer may be categorized as carcinoma which occurs in the epithelial tissues because of too much exposure to sun or UV radiation, sarcoma that originates from the mesodermal tissue, particularly the connective tissue primarily arises via mutation in the DNA that mainly affect the genes which is responsible of cell growth, leukemia that develops from the dysfunctional proliferation of developing leukocytes, where the bone marrow form abnormal cells causing it to become malignant, and lymphoma that starts in the lymphatic system because of genetic mutation and some environmental factors such as exposure to certain chemicals, infection and radiation.

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