Current Carcinoma Trends: An Experience from a Government Tertiary Care Facility in Dharmapuri, Tamil Nadu, South India

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Abstract
To evaluate the histopathological spectrum of malignancies and to understand the prevalent trends of various cancers in central part of Tamilnadu. This is a retrospective study in a tertiary care institution, where cases received at the institution during the period of January-2020 to December-2022 were reviewed and histopathologically confirmed cases of malignancy were included in the study. A total of 403 cases were included in this study of which majority were in the group of 51-60 years. Cervix was the commonest site for primary malignancies followed by breast .Squamous cell carcinoma of the cervix was the commonest histological type followed by IDC in the breast. Upper aerodigestive malignancies ranked the third in which squamous cell carcinoma was the commonest type. In spite of many recently developed diagnostic modalities, histopathological examination remains the gold standard for the diagnosis of malignant lesions. Hospital based Cancer Registries should be established to understand the prevalence of various cancers in a demographic area. Periodical studies should be conducted based on cancer statistics to understand the recent trends in cancer. An Experience from a Tertiary Care Facility in Dharmapuri, Tamil Nadu, South India.

INTRODUCTION

Despite the remarkable progress in the field of cancer research and treatment, cancer continues to pose a significant global health challenge. In developed countries, it stands as the primary cause of mortality, while in developing nations, it holds the second position in terms of mortality[1]. The escalating incidence of cancer in developing countries can be attributed to a combination of factors, including increased economic development, an aging population, and the adoption of lifestyles associated with a higher risk of cancer.

Recent data from the Global Cancer Observatory (GLOBOCAN) highlight a concerning trend, with approximately 19 million new cancer cases and 9 million cancer-related deaths reported globally in the year 2020[1]. These statistics emphasize the urgent need for a deeper understanding of the factors influencing cancer incidence and mortality.

To unravel the complexities of cancer, a systematic collation of various parameters such as genetics, dietary habits, environmental factors and social structures is imperative. This multidimensional approach not only enhances our comprehension of cancer etiology but also aids in predicting its occurrence. Recognizing this, significant strides were taken in 1982 with the establishment of population-based cancer registries (PBCRs) and hospital-based cancer registries (HBCRs) under the National Cancer Registry Program (NCRP) by the National Centre for Disease Informatics and Research (NCDIR) of the Indian Council of Medical Research (ICMR- NCDIR-NCRP) in Bengaluru, India.

Over the years, the NCRP has published numerous reports, contributing valuable insights into the cancer landscape in India. Additionally, independent research groups have conducted studies elucidating national-level patterns associated with cancer burden and epidemiology[4-9]. Despite these efforts, a comprehensive understanding of the magnitude and time trends in cancer distribution remains elusive. Challenges such as decentralized populations, geographical constraints, and a disproportionate ratio of healthcare workers to patients hinder a systemic and complete grasp of the cancer scenario in India[10].

Addressing these challenges is crucial for developing effective strategies for cancer prevention, early detection, and treatment. As we continue to grapple with the impact of cancer on global health, concerted efforts are needed to improve data collection, enhance collaboration between research institutions and implement targeted interventions to mitigate the growing burden of cancer worldwide.

The core focus of this study is to establish a comprehensive framework for assessing and forecasting the impact of cancer within the state of Tamil Nadu, India. Recognizing the need for localized insights, the study specifically targets the Dharmapuri region within Tamil Nadu, aiming to delineate the current status and discern patterns of cancer prevalence in this specific geographic area.

In addition to providing a snapshot of the current state of cancer in Tamil Nadu, the study aspires to be a catalyst for actionable interventions. By highlighting specific areas of concern and potential avenues for improvement, it aims to guide policymakers, healthcare professionals and public health organizations in tailoring initiatives that can effectively address the challenges posed by cancer in the region. This holistic approach is crucial for developing targeted and effective strategies for cancer prevention and control.

In summary, this study goes beyond being a mere examination of cancer statistics., it strives to be a dynamic tool for informed decision-making. Through its emphasis on understanding the intricacies of cancer at both the state and regional levels, it aspires to contribute meaningfully to the ongoing efforts to mitigate the impact of cancer in Tamil Nadu and serve as a model for similar initiatives in other regions grappling with the challenges of this formidable health concern.

MATERIALS AND METHODS

The methodology employed in this hospital-based three-year retrospective study aimed to provide a robust framework for understanding the prevalence and characteristics of cancer within the patient population. The study period spanned from 2019 to 2022, during which cancer records were systematically collected and analysed using centralized hospital records of Dharmapuri Government Medical College, Dharmapuri and Tamil Nadu. The study cohort comprised 403 patients who sought consultation from the pathology department specifically for a histopathology examination. This extensive and diverse sample size was pivotal in capturing a representative snapshot of the cancer landscape within the hospital setting. The inclusion criteria focused on patients who underwent histopathological evaluation during the specified three-year period, ensuring a comprehensive analysis of cancer cases.

The histopathological examination process commenced with a meticulous gross examination of tissue specimens. This detailed examination aimed to provide a thorough understanding of the macroscopic features of the tissues, facilitating the identification of abnormalities and anomalies. Subsequently, a histopathological analysis was conducted, adhering to standardized protocols to ensure consistency and accuracy in the interpretation of microscopic findings. To classify neoplastic lesions, the study utilized the latest World Health Organization (WHO) classification system. This classification system, known for its

currency and reliability, enabled a precise categorization of various types of neoplasms based on their histopathological characteristics.

Following the primary histopathological analysis, the study revealed that out of the total patients, 403 cases were identified as malignant tumors. Importantly, this analysis considered different age groups, providing insights into potential age-related patterns in the occurrence of malignant tumors.

The study also highlighted that the majority of patients with non-neoplastic conditions exhibited chronic inflammatory pathology. This observation underscores the importance of considering a broad spectrum of pathologies in clinical practice, not limited to malignant tumors.

Furthermore, the study categorized benign and borderline lesions, with fibroadenomas and atypical ductal cell hyperplasia being the primary constituents, respectively. This nuanced categorization enhances the understanding of the histopathological spectrum, offering valuable insights into the diverse nature of lesions encountered in the study population. All findings, including histopathological insights, were meticulously recorded, tabulated and graphically depicted.

RESULTS AND DISCUSSIONS

The socio-demographic characteristics of the study population were depicted in Table 1. Total of 403 cases of malignancies were included in this study. Majority of the patients were in the age group of 51-60 years (38 %) which was closely followed by 27.2 % in the age group of 41-50 years. Only 3 cases were in the group of 21-30 years and only 2 cases fell under the 81-90 years of age group. (Fig. 1)

Approximately 45 % of these cases involved the female genital tract closely followed by carcinoma of the breast which comprised of 17. 5% of all cases. The most commonly involved systems were Female genital tract, Breast, Upper aero digestive tract, gastrointestinal tract and Male genital tract. (Fig. 2)
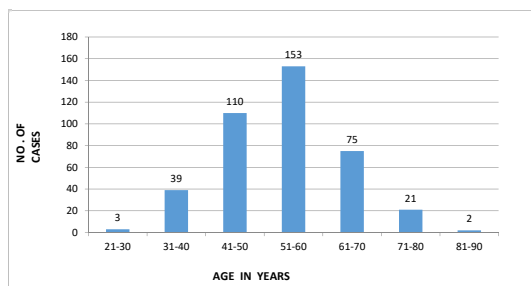

Fig. 1:Socio-demographic characteristics of the study population
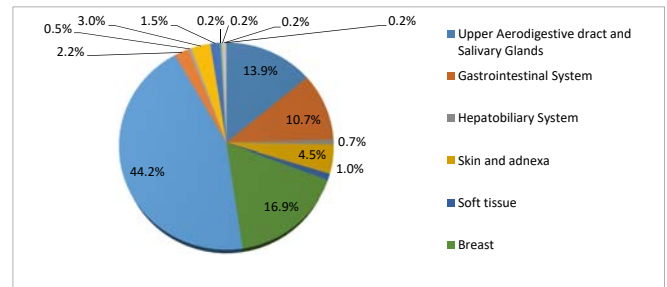

Fig. 2. Distribution of malignancies by organ systems

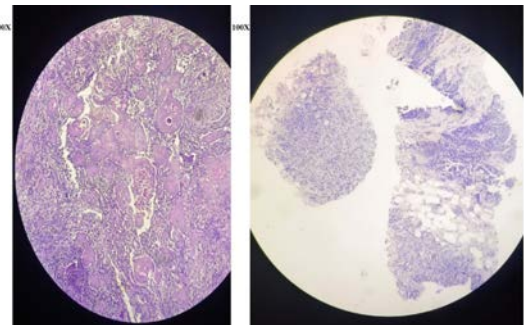Fig. 3: Anal canal carcinoma

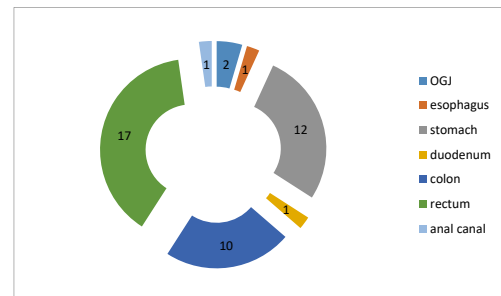

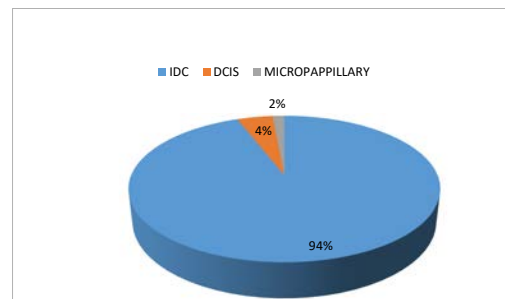Fig. 4:Distribution of malignancies by site in the gastrointestinal tract

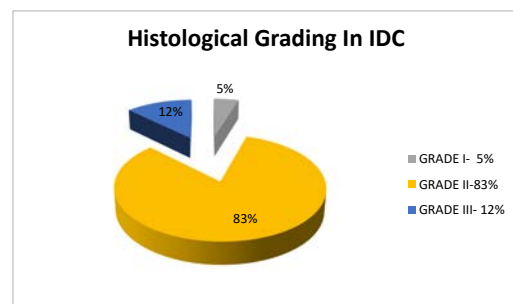Fig. 5. Histological types of breast carcinoma

Fig. 6: Histological grading of invasive ductal carcinoma

A total of 178 cases involved the female genital tract out of which 159 cases involved the cervix, 12 involved the endometrium, 3 were ovarian cancer and 3 were vulval cancer. More than 34.5 % (55 cases) of the cases out of 159 cases of cervical cancer were between the ages 51 and 60 years. Invasive squamous cell carcinoma was the most prevalent type of malignancy accounting for 150 (94 %) of the cases, followed by carcinoma in situ that accounted for 6 (0. 03 %), followed by adenocarcinoma comprising 2 of the total cases and one case of adenosquamous carcinoma. (Fig. 2) 68 cases were reported as Carcinoma of the breast out of which 64 cases were Infiltrating Ductal carcinoma 3 cases were Ductal carcinoma in situ and and 1 case was reported as Micro papillary type (Fig. 4). Of the 64 cases of infiltrating ductal carcinoma 3 cases were grade I, 53 were grade II and 8 were grade III. Of the 68, 47 cases were mastectomy specimens whereas 21 were trucut biopsies.

Malignancies of the gastrointestinal tract reported were 43 cases ranging in age group of 35 years to 80 years with the mean age of incidence being 54 years. 2 cases involved the esophagogastric junction, 1 case was esophageal carcinoma, 12 cases were gastric carcinomas, 1 was periampullary carcinoma of the duodenum, 10 were colonic carcinomas, 17 were rectal malignancies and 1 was anal canal carcinoma. (Fig. 3)

Of the 56 malignancies of the upper aerodigestive tract 12 cases were cancer of the tongue, 21 cases were carcinoma of the buccal mucosa, 5 cases involved the palate, 2 cases involved the lip

Cancer occurrence and mortality statistics are pivotal for shaping cancer management strategies within any nation. These statistics not only quantify the extent of the disease but can also shed light on its causes, the influence of socio-demographic shifts and highlight specific cancer types requiring prioritized intervention. The present investigation scrutinized the cancer incidence among patients seeking treatment at a tertiary care hospital in Dharmapuri.

Among the documented cancer cases, approximately 51% were male and 49% were female. The ratio of male to female patients, expressed as a percentage, was approximately 104, mirroring comparable figures observed globally (110) and in India (99). Notably, our study revealed a significantly higher proportion of lip and oral cavity cancer cases among males, comprising approximately 13.9% of cases, in contrast to the global incidence of 2.1%. Similarly, while lung cancer typically constitutes 13% of global cancer cases, it represented 7% in our study cohort. Additionally, cervical cancer accounted for 8% of cases in our study, in contrast to the 12.3% incidence rate observed in India. These disparities highlight distinct cancer patterns despite similar sex ratios, warranting further investigation into underlying factors.

Majority of the patients were in the age group of 51- 60 years (38 %) which was closely followed by 27.2 % in the age group of 41-50 years. Only 3 cases were in the group of 21-30 years and only 2 cases fell under the 81-90 years of age group. These findings align with previous studies conducted by Ferlay *et al.* and Yancik *et al.,* underscoring consistency across different research endeavours.

The rise in cancer incidence, mortality, and morbidity is frequently attributed to population aging. Therefore, prioritizing initiatives for promoting healthy and active aging should be regarded as essential in contemporary India, akin to the attention given to maternal and child healthcare.

CONCLUSION

The methodological approach employed in this study combined rigorous histopathological examination, adherence to contemporary classification standards, and the integration of immunohistochemistry to provide a detailed understanding of the cancer landscape over a three-year period. The systematic analysis and presentation of findings position this study as a valuable contribution to the scientific literature, offering insights that can inform clinical practices, guide treatment strategies, and inspire further research in the field of oncology. Top of Form

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