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A retrospective study on the analysis of intestinal tumors using histology and p53 expression

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Abstract
Background: The World Cancer Report ranks colorectal cancer as the second most common malignancy globally. The incidence of intestinal neoplasms varies globally, and it seems that environmental variables, rather than heredity, are the primary determinant of this condition. Colorectal cancer is far less common in our country than in the West.
Materials and Methods: Out of 1,189 cases reported at the Department of Pathology, Madha Medical College and Research Institute in Chennai, Tamil Nadu, India, 91 cases of intestinal neoplasms were included in this study. The patients were diagnosed between February 2017 and January 2018. Of the 91 specimens, 30 were endoscopic biopsies and 61 were acceptable. Age, sex, symptoms, colonoscopy results, and lesion site were carefully considered in the analysis of detailed patient histories.
Results: Tumors of the intestinal tract are among the most common types of neoplasms that can be found. These tumors display a vast variety of histological patterns, a variety of clinical presentations, a large variety of physical patterns, and a tremendous range of prognosis. The small intestine is responsible for 0.3% of all malignancies, while the large intestine is responsible for 2.91 percent.
Conclusion: The pathology department conducted this study in retrospect. Reputable intestinal tumor tissues and samples were used in the inquiry.

Keywords: Retrospective investigation, p53 expression, histology, and intestinal malignancies

Introduction
According to the World Cancer Report 2000, colorectal cancer ranks as the second most frequent malignancy globally. The distribution of intestinal neoplasms varies globally, and they are primarily attributed to external factors rather than heredity. Colorectal cancer is infrequent in our country as compared to the western world. Curiously, despite its considerable length and abundant reservoir of proliferating cells, the small intestine exhibits a low incidence of tumor formation. Small bowel tumors account for approximately 1% to 2% of all gastrointestinal neoplasms [1, 2].
The symptoms associated with tiny intestinal tumors are generally absent or of a moderate nature. If a small intestinal tumor exhibits symptoms, there is a 75% probability that it is malignant. When symptoms manifest, they are often of a mild nature and have a prolonged duration. This phenomenon can be attributed to the disposable character of the small bowel. Intestinal obstruction, when it occurs, is intermittent and persistent. Although bleeding is observed in 25% of tumors, it is generally of a mild nature. A significant proportion of colorectal malignancies remain asymptomatic for an extended period of time. Due to their propensity for bleeding and the resulting anemia, these sizable lesions commonly present with symptoms of weakness and fatigue [3, 4].
Small intestine neoplasms are exceedingly rare; their initial identification occurred in 1655. Wesner's case of leiomyosarcoma in 1765 was the initial clinical documentation of a tiny intestinal tumor. Carcinomas are frequently observed in the gastrointestinal tract and appendix. The cell responsible for the development of these malignancies was delineated by Nick Kulchitsky [5].
In 1926, Dukes observed the correlation between colon polyps and cancer. In 1940, he introduced a method for classifying colon cancer that relied on the extent of lymphatic dissemination and infiltration. In 1977, the World Health Organization (WHO) introduced a histological classification system for colorectal cancers. Surgical intervention is the preferred modality for the treatment of colorectal cancer. The postoperative outcome, prognosis, and

need for adjuvant therapy are determined by the pathological assessment of a reliable specimen. The important components of the pathological examination of a colorectal cancer material are the pathological determination of the TNM stage, tumor type, histological grade, respected margin, and vascular invasion. This study conducted a retrospective analysis to investigate the occurrence of intestinal tumors in specific age groups, genders, locations, and histomorphological features of different types of tumors [6-8]. In addition, the present study evaluates the prognostic significance of the tumor suppressor gene protein p53 in colorectal adenocarcinoma and its role in intestinal neoplasms. Furthermore, a comprehensive analysis and comparison were conducted on the latest studies pertaining to intestinal cancers [9].

Materials and Methods

The research team from the Department of Pathology at Madha Medical College and Research Institute in Chennai, Tamil Nadu, India, examined 91 cases of intestinal neoplasms that were detected between 2017 and 2018. A total of 1,189 cases were recorded at this institution. A total of 91 specimens were collected, including 30 endoscopic biopsies and 61 acceptable specimens. Extensive patient histories were reviewed, with special emphasis on age, sex, symptoms, results of colonoscopy, and exact lesion locations.

Results

A total of 486 intestinal neoplasms were detected during the study period, with 91 of them being identified. According to the findings of our investigation, the annual incidence of intestinal neoplasms was determined to be 2.6% (Table 1).

Table 1: Intestinal neoplasm incidence

Period	Total No. of specimens	Total neoplasms	Intestinal neoplasms
	1191	486	91

Table 2: Small and large intestine neoplasms

Total No. of neoplasms	Small intestine	Large intestine
	No. of cases	No. of cases
91	12	79

Out of the total 91 intestinal neoplasms examined, 80 were found in the large intestine, representing 90% of the observed cases (Table 2).

Table 3: Benign and malignant neoplasms

Tumour Type	Benign		Malignant	
	Small intestine	Large intestine	Small intestine	Large intestine
No. of cases	2	5	9	72

Among the 91 intestinal neoplasms examined, 75% were found to be malignant. Among the total of 3174 instances of malignant tumors, it is shown that big intestinal tumors constitute 2.99% of the cases, while small intestinal tumors account for 0.3% (Table 3).

Table 4: The clinical presentation of tiny intestinal cancers

Sr. No.	Symptoms	Number of cases
1.	Intestinal Obstruction	7
2.	Bleeding Per Rectum	2
3.	Abdominal Mass	1
4.	Abdominal Pain	1

Table 4 indicates that intestinal obstruction is the most common clinical manifestation of small intestinal tumor, accounting for 73% of cases.

Discussion

One of the most common types of tumors is an intestinal tumor, which can appear in many different ways, both visually and clinically, and has a vastly variable prognosis. Two and a half percent of all malignancies occur in the large intestine, while three percent occur in the small intestine. This agrees with what Ioannis Hatzaras and coworkers found. Despite an increasing incidence and regional variation, these tumors are still quite rare in India. In wealthy countries, colorectal cancer is far more prevalent than small bowel cancers. Compared to less than one occurrence of small bowel cancer globally, there are approximately seven instances of large bowel cancer per 100,000 persons in India [10, 11].

Cancers of the small and large intestines are uncommon in India. A colorectal cancer incidence rate of 3.6% is relatively high in India when compared to other nations. Of the 91 cases we looked at, 90% were cancers of the large intestine and 10% were tumors of the small intestine. Tumors that are malignant are more common than those that are benign. Patients of all ages were found to have intestinal tumors, although the fourth to sixth decades had the highest occurrence. T. Starzynska *et al*. and Abou Zeid AA *et al*. [12, 13] have found similar results.

Cancers of the small intestine account for just 1% to 2% of gastrointestinal cancers overall. The incidence of small intestine cancer has been on the rise in recent decades, according to Sai Yi Pan *et al*., with carcinoid tumors seeing a four-fold increase, adenocarcinoma and lymphoma seeing a less significant rise, and sarcoma showing no change. There is no indication of sexual preference in this study, but small intestinal neoplasms are more common in individuals aged 30-50. The incidence rates of small intestinal cancer among women are higher than among males in North America, Europe, Asia, and Central / South America, with a few notable exceptions. These countries include Iceland, Italy, Poland, Brazil, Australia, and Japan. Research

conducted by David Lewin *et al*. and Tadashi Terada *et al*. indicates that there is a slight male predominance and that the typical age of presentation is between 55 and 63 years old. One possible explanation for the observed diversity in the location of small intestinal neoplasms is the large number of cases that were studied [14-16].

Small intestine cancers, like carcinomas at other primary sites, disproportionately affect men. Environmental, endogenous, and behavioral factors that differ across the sexes contribute to this trend. Among men of all ages, Osama Qubaiah *et al*. discovered that lymphomas were the most common histological subtype of small intestinal cancers. Small intestine lymphomas are distinct from other types of cancer due to their higher prevalence in young males compared to women. The most common symptom of a small intestinal tumor is blockage of the small intestine. This agrees with what David Lewin and coworkers found. In this study, adenocarcinoma is the most common histological type and the duodenum is the most common site.

Research by Zhou-Zhi-Wei *et al*. and Gill SS *et al*. [17-19] supports the idea that the ileum is home to the most common type of malignant lymphoma, which makes up over 50% of those cases. Eleven out of twelve patients with small intestinal neoplasms in this study had cancer. Ioannis Hatzaras *et al*. found a correlation between the frequencies of cancerous tumors in their study. Adenocarcinomas account for 36% of small intestinal cancers, lymphomas for 36%, benign tumors for 18%, and metastatic malignant melanoma deposits for 9%. That lines up with what Zhou Zhi-Wei *et al*. found. According to research by David Lewin *et al*., almost 40% of cancers found in the small intestine are benign. Adenomas account for 20% of the tumors, lipomas for 15%, and smooth muscle stromal tumors for 30%. Of all malignant tumors, 33% are adenocarcinomas, 33% are carcinoids, 20% are lymphomas, and 10% are mesenchymal tumors. Zhou Zhi-Wei *et al*. [20-22] found that malignant lymphoma is the second most common tumor after adenocarcinoma.

Secondary malignant melanoma deposits were found in the small intestine material that we received for our examination. The main deposits originated from the sole, which is an incredibly rare occurrence. According to Washington K *et al*., palliative resuscitation may be necessary in cases of small bowel obstruction or perforation due to metastasized cancers, which often manifest as multiple polypoid tumors. The most common kinds of primary tumors include malignant melanoma, choriocarcinoma carcinoma, breast, ovarian, and lung cancers. One year following palliative treatment, patients with multiple melanoma metastases usually die. Some people with isolated metastases may be able to survive for a long time, but [23-25].

When thinking about public health, big bowel cancer is a major concern. Annually, more than one million cases of colorectal cancer are detected around the globe. The annual death toll from colorectal cancer exceeds half a million. According to Peter Boyle *et al*., colorectal cancer was the most common malignancy among individuals 75 and older in the US. Environmental factors may play a significant role in the development of colon cancer, according to studies on migration and racial/ethnic differences in the disease. Mutations in mucosal cells, activation of tumor-promoting genes, and deletion of tumor-preventive genes are all components of the complex pathophysiology that underlies large bowel cancer. Colorectal carcinomas emerge from the majority of benign adenomatous polyps that reach a large size. If a tumor has a villous appearance or contains dysplastic cells, it is more likely to develop into cancer [26, 27].

People with inflammatory bowel diseases and FAP syndromes have a high chance of developing colorectal tumors, even though they only account for a small percentage of the total incidence. Vitamins A, E, and D, folate, an H2 antagonist, anti-inflammatory drugs, calcium supplements, and beta-carotene are all on the list of chemopreventive treatments for colorectal carcinomas according to Langmann *et al*. The highest rate of colorectal cancer is observed in people aged 60 to 79 years. Among those cases, only 20% occur in those younger than 50.

According to research by Peter Boyle *et al*. [64], the incidence of colorectal cancer is higher in men than in women when adjusted for age. The risk of colorectal cancer doubles every decade after the age of 40 and grows significantly in both men and women until the age of 75. The median age upon diagnosis is 71 years old. When adjusting for age, colorectal cancer is more common in men in the US, AU, JP, and IT than in women. Rectal lesions affect 1.2 times more men than women. Closer to the body tumors do not differ in gender [28].

Participants' ages varied from twenty to seventy-five in our study. The majority of colorectal cancers were found in men. This agrees with the findings of the studies by Abou Zeid AA *et al*. and T. Starzynska *et al*. Most colonic tumors are located in the sigmoid colon and rectum. Preliminary data suggests an increasing proportion of proximal cancers. There were more lesions in the distant area, even though our risk is modest. Since many of these are well-differentiated adenocarcinomas, their early detection may have been facilitated by environmental variables or their relative ease of access. In nations with a high risk of colorectal cancer, the recto-sigmoid area is the most common site of cancer development [29].

Seventy-four out of one hundred colorectal cancers examined here were located on the left side of the body. The most common location was the rectum, which presented in 66% of cases. Osime U. *et al*.'s findings are in line with this. Rectus hemorrhage was the most common clinical sign of colorectal cancers in this study. The ascending colon and caecum tumors usually manifest as polypoid exophytic masses, as stated by Chen Liu *et al*. An annular lesion, a distal colon cancer causes the intestine to constrict in a napkin ring pattern. Nevertheless, ulceroproliferative growths constituted the bulk of the malignancies in both the proximal and distal colons in the present investigation. The findings align with those of Qizilbash AH's research. We found that out of 100 colorectal cancers, 95 were malignant, 5 were benign, and 91 were adenocarcinomas. A total of 1% comes from melanoma, adenosquamous carcinoma, neuroendocrine carcinoma, and signet ring cell carcinoma [30, 31].

This study confirms previous findings that adenocarcinoma is the most common form of colon cancer, accounting for 91% of tumors. Colorectal carcinomas with mucinous tumors, which account for 10-15% of cases, are less common. Around 9% of the participants in this study had mucinous adenocarcinoma; this is in line with what was

found in a previous study by Abdul Kareem FB *et al*., however the exact percentages varied between the two studies. Mutant mucinous adenocarcinomas were found in both the colon and its right side. It shows that mucinous adenocarcinoma patients are younger on average and that men make up a larger proportion of the patient population than adenocarcinoma patients. This is supported by the findings of studies by Azadeh Safaee *et al*. and J. Verhulst *et al*. [32, 33].

Mucinous adenocarcinomas had a higher proportion of high-grade tumors. The poor prognosis of mucinous adenocarcinoma may be due to the advanced stage at presentation. Mucin content, in conjunction with histological grade, has the potential to be a strong indicator of prognosis. By utilizing MUC1/DF3 and MUC5/CHL2 immunostaining, it becomes possible to distinguish between low grade and high grade mucinous adenocarcinoma. Predicting the clinical outcome of this kind may be notably helped by the expression of MUC2 and MUC5AC [34].

In contrast to the previous study by Abdul Kareem FB *et al*., the present investigation found a higher prevalence of well-differentiated adenocarcinomas. Nevertheless, many investigations reached conflicting findings. Our research found that 53.3% of colorectal adenocarcinomas have overexpressed p53 nuclear protein. These discrepancies could be caused by the use of multiple grading systems and the diversity between observers [35].

The present study found that p53 expression was higher in non-mucinous adenocarcinoma. According to Yuan-Tzu-Lan *et al*., there are two separate pathways for colorectal carcinogenesis: chromosomal instability and microsatellite instability. In their study, they found that 29% of mucinous adenocarcinoma and 39% of non-mucinous adenocarcinoma both showed positive p53 tests. T Starzynska *et al*. used follow-up data to study colorectal cancer patients and looked at how p53 expression correlated with clinical, histological, and prognostic factors. They concluded that p53 expression occurred at the end of the illness process and was strongly linked to advanced disease stage, early relapse, and mortality. According to what J. Walker *et al*. found in their research, the stage is the most reliable indicator of survival. Overexpressed p53 was associated with a poor outcome in colorectal cancer, they found. The fraction of p53 nuclear protein expression increases as the stage proceeds in this experiment [36].

A study conducted by Vikos *et al*. on 41 colorectal cancers revealed a strong association between elevated p53 levels and the existence of DNA aneuploidy, a factor linked to a worse than favorable prognosis. Further, they noted that p53 expression analysis could allow for the separation of colorectal carcinomas into distinct biological subgroups. Scott N *et al*. looked at 52 colorectal cancers and found no correlation between p53 overexpression and any of the characteristics related to prognosis. There is no correlation between p53 expression and tumor stage or degree of differentiation, which is why Campo *et al*. concluded that p53 is useless as a prognostic predictor in colon cancer. Differences in the prognostic effect of p53 in colorectal adenocarcinomas may have resulted from different tumor numbers investigated, different methodologies, antibodies, or both [37].

Conclusion

At the pathology department, this study was conducted retrospectively. The investigation relied on credible samples and biopsies of malignancies found in the intestines. Out of the 91 specimens collected, 100 were from the large intestine and 11 from the small intestine. Of these, 74 were samples taken for biopsy and 37 were considered respectable specimens. We took note of the lesion's age, sex, and where it was located. Neoplasms of the intestines accounted for 2.6% of all neoplasms at our institution. Stages and grades of colorectal carcinomas were determined. Several types of intestinal tumors were examined for p53 expression using P53 antibody immunohistochemistry. After then, the results were collated and examined.

Funding

None.

Conflict of Interest

None.

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