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TO STUDY THE RELATIONSHIP OF DEMOGRAPHIC VARIABLES ON LYMPH NODE YIELD AFTER SURGERY FOR MID-LOW RECTAL CANCER IN A STUDY POPULATION ATTENDING A TERTIARY CARE HOSPITAL IN NORTH INDIA

Surgery

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ABSTRACT

BACKGROUND: Colorectal cancer (CRC) is one kind of malignant tumour of the digestive tract which has high morbidity and mortality all over the world. Kashmir has been reported to have high incidence of gastrointestinal cancers. In Kashmir, CRC represents third most common GIT cancer after esophageal and gastric cancer

AIMS: This prospective study was conducted at Sher-i-Kahmir Institute of Medical Sciences in the colorectal division of General and Minimal Invasive Surgery department to see the relationship between various demographic variables and lymph node yield after surgery for mid-lower rectal cancers.

METHODOLOGY: The Study is Prospective one.The Inclusion Criteria include, Growth about 4-10 cm from anal verge with HPE documented adenocarcinoma and the Exclusion Criteria include a)Growth beyond 10cms of anal verge.b)Patients subjected to Abdomino-perineal resection & c) Patients with histopathology other than Adenocarcinoma. The detailed history viz-a-viz demography of the patient was taken like Age, gender and BMI. The clinical examination and baseline investigations were done including Specific investigations like -CEA levels, CECT, MRl and Colonoscopy with biopsy of the lesion.The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

CONCLUSION: BMI of patients has statistically significant association with lymph node retrieval however Age and gender shows no association with lymph node retrieval.

RESULTS: In our study we took 97 patients with mean age of 43.4 years and out of these patients 41% patients were in the age group of 20-40years. Most of the patients that were diagnosed of rectal cancers were males contributing about 56.7% to the burden of disease. In our study most of patients had BMI less than 25 with mean BMI of 20.7.

KEYWORDS

colorectal cancer, demography, lymph node retrieval,

INTRODUCTION

Colorectal cancer (CRC) is one kind of malignant tumour of the digestive tract which has high morbidity and mortality all over the world [1].With peoples transition of life styles and food habits, the incidence rate of colorectal cancer is rising for past few years. Most of the colon cancers are adeno-carcinomas (cancer that begin in the cells that make and release mucus and other fluids). Genetic analysis shows that colon and rectal tumours are essentially genetically same. Nowadays, surgery is still the principal method to treat CRC.CRC incidence and mortality rates vary markedly around the world. Globally, CRC is the third most commonly diagnosed cancer in males and the second in females [2]. Rates are substantially higher in males than in females. Global, country-specific Incidence and mortality rates are available in the World Health Organization. Globally, the incidence of CRC varies over 10-fold. The highest incidence rates are in Australia and New Zealand, Europe and North America, and the lowest rates are found in Africa and South-Central Asia (CRC incidence by world area) [2]. These geographic differences appear to be attributable to differences in dietary and environmental exposures that are imposed upon a background of genetically determined susceptibility.

Low socioeconomic status (SES) is also associated with an increased risk for the development of CRC; one study estimated the CRC risk to be about 30 percent increased in the lowest as compared to the highest SES quintile [3]. Unhealthy but potentially modifiable behaviors such as physical inactivity, unhealthy diet, smoking, and obesity are thought to account for a substantial proportion (estimates of one-third to one-half) of the socioeconomic disparity in risk of new onset colorectal cancer [3-5]. Other factors, including lower rates of CRC screening, also contribute substantively to SES differences in CRC risk [6].

INDIAN EPIDEMIOLOGY: The incidence and survival rates of CRC in India remains low in comparison to the rising incidence in rest of East Asia. During the past 3 decades, the incidence of colorectal cancer was at a low level in urban and rural populations in India, in comparison with figures observed in developed countries of North America and Europe, the incidence data extracted from selected Indian cancer registries.The volumes on cancer incidence in 5 continents shows the low and stable incidence and mortality rates from colon and rectum cancers in both men and women. However, this low incidence rate was found associated with a low 5-year relative survival rate.It is likely that the prevailing environmental factors and lifestyle, including a reduced consumption of sugars, calories and fat-rich food, an increased consumption of vegetables and fruits, and an adequate physical activity with avoidance of overweight and obesity, are responsible for the low risk of colorectal cancers. In contrast, the low survival, even for localized cases, suggests severe deficiencies in early diagnosis and effective treatment in India. A strategy to control the disease in India, based on improving awareness of the risk factors for colorectal cancer while keeping the traditional lifestyle, and on investments in early diagnosis and adequate treatment should be implemented. However, an organized, population-based screening of colorectal cancer may not prove cost-effective, given the low burden of colorectal cancer.

EPIDIMIOLOGY OF KASHMIR VALLEY: Kashmir has been reported to have high incidence of gastrointestinal cancers. In Kashmir, CRC represents third most common GIT cancer after esophageal and gastric cancer [7].

The crude incidence rate of colorectal cancer was 3.65/100,000; it was

3.78 in males and 3.50/100,000 in females. In Kashmir, the incidence rates for CRC in Muslims and Hindus were found different. The crude incidence rate for CRC was highest for district Srinagar i.e. 6.19/ 100,000 (urban area) and lowest for district Kupwara i.e. 1.59/ 100,000 (rural area). The highest number of cases were detected in the age group 55-59 years. The age specific rate for CRC was highest in the age group 55-59 (17.21/100,000) followed by 65-69 years (14.86/ 100,000). The age standardized incidence rate was 4.52/ 100,000 per year. Some studies found that incidence of CRC in Kashmir valley is similar to that reported in rest of India [8-10].Since, Sher-i-Kashmir Institute of medical services is the only tertiary care center in the whole State of Jammu and Kashmir which has a separate colorectal division, hence it makes the place a high volume center for management of these cancers. Besides, many people here do not report to a surgeon because of social inhibitions especially the female folk ,otherwise the incidence would be much more than the reported incidence.

Studies have identified age (risk increases as people get older), colorectal polyps, family history of colon cancer, genetic basis, personal history of colon cancer, certain medical conditions (like ulcerative colitis and chron's disease), certain diets high in fat and low in fibre) and smoking as the risk factors for colon cancer.

Thus this prospective study of finding the relationship between demographic variables on Lymph Node Yield after Surgery for mid-low rectal cancers was conducted at SKIMS in the Colorectal Division of General and Minimal Invasive Surgery department.

MATERIALS AND METHODOLOGY

The Study is Prospective one.The Inclusion Criteria include, Growth about 4-10 cm from anal verge with HPE documented adenocarcinoma and the Exclusion Criteria include a)Growth beyond 10cms of anal verge. b)Patients subjected to Abdomino-perineal resection & c) Patients with histopathology other than Adenocarcinoma. The detailed history viz-a-viz demography of the patient was taken like Age, gender and BMI. The clinical examination and baseline investigations were done including Specific investigations like -CEA levels, CECT, MRI and Colonoscopy with biopsy of the lesion.The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

OBSERVATION AND RESULTS

Table 1: Age distribution of study patients

Age (years)	Frequency	Percentage
20-40	39	40.2
40-60	37	38.1
≥ 60	21	21.6
Total	97	100
Mean±SD=43.4±6.51		

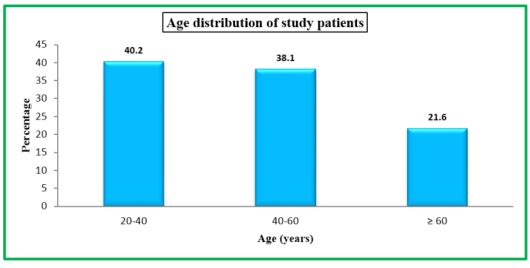


Table 2: Gender distribution of study patients

Gender	Frequency	Percentage
Male	55	56.7
Female	42	43.3
Total	97	100

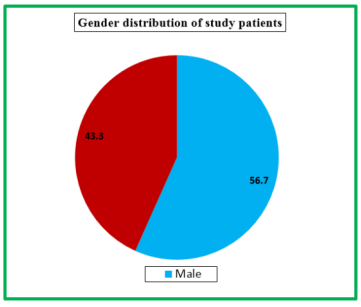


Table 3: Distribution of study patients as per BMI

BMI	Frequency	Percentage
≤ 25	85	87.6
> 25	12	12.4
Total	97	100
Mean±SD=20.7±2.36		

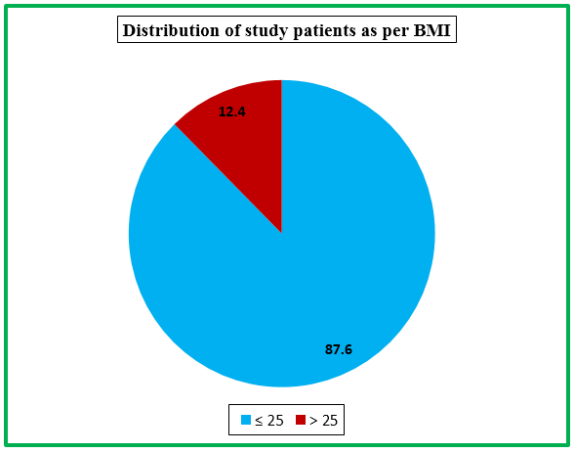


Table 4: Showing association of age with lymph node retrieval

Age (years)	N	Mean	SD	Range of lymph nodes	P-value
20-40	39	11.1	6.71	0-26	0.548
40-60	37	9.5	7.18	0-34	
≥ 60	21	9.4	4.19	1-16	

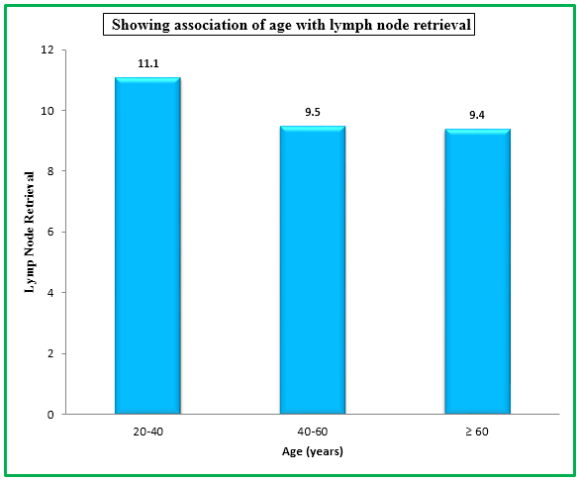


Table 5: Showing association of gender with lymph node retrieval

Gender	N	Mean	SD	Range of lymph nodes	P-value
Female	42	9.5	6.92	0-34	0.503
Male	55	10.6	6.09	0-26	

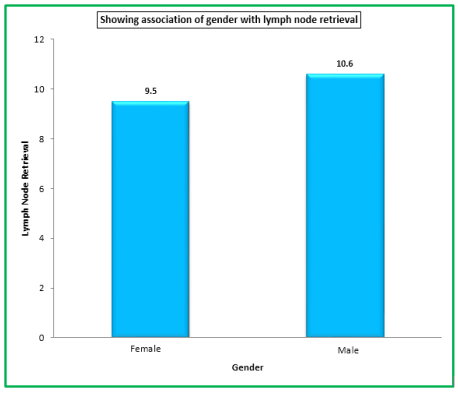
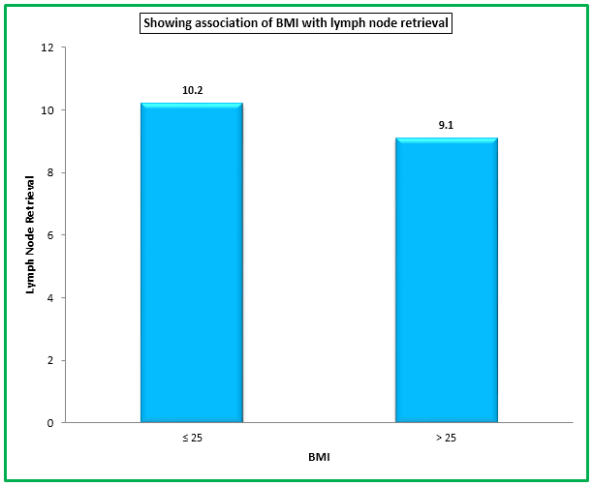


Table 6: Showing association of BMI with lymph node retrieval					
BMI	**N**	**Mean**	**SD**	**Range**	**P-value**
≤ 25	85	11.7	6.53	0-34	0.029*
> 25	12	7.4	4.15	1-14	

Statistically Significant Difference (P-value<0.05)



DISCUSSION

Colorectal cancer (CRC) is one kind of malignant tumour of the digestive tract which gets high morbidity and mortality all over the world [1]. With peoples transition of life styles and food habits, the incidence of colorectal cancer is rising for past few years. In this study we analyzed various factors that affect the lymph node retrieval in these patients. Lymph node evaluation is a frequently discussed potential quality measure for colorectal cancer surgery and an adequate lymph node retrieval has been proposed as a benchmark. As Chang et al. [11] point out, "the number of lymph nodes recovered from a patient with colorectal cancer has been identified as a potentially important measure of the quality of cancer care by many organizations, including the American College of Surgeons, the American Society of Clinical Oncology, the National Comprehensive Cancer Network, the National Quality Forum, healthcare insurance providers, and others." In our study we analyzed the factors which affect the lymph node retrieval in these patients and then affect the proper staging of disease and thus proper treatment and survival of these patients.

The factors we considered in our study include age, gender and BMI, In our study we took 97 patients with mean age of 43.4 years and out of these patients 41% patients were in the age group of 20-40years which is much younger than the published figures. The reason of this finding of increased incidence among young could be that most of the patients attending our clinics are illiterate and they often are unaware of their actual age and under report their age. Moreover, there is increasing trend of rectal cancers among young in India [12,13].

Most of the patients that were diagnosed of rectal cancers were males contributing about 56.7% to the burden of disease. This stands true with the world literature which reportedly says incidence more in males [1]. Also, according to Indian database incidence of rectal cancer is more in males. Both age and gender were found to have no association with lymph node retrieval which is supported by the study conducted by Dr Kang Young Lee and colleagues on factors that affect lymph node retrieval in resected specimens of colorectal cancer [14].

In our study most of patients had BMI less than 25 with mean BMI of 20.7. We find a significant increase in lymph node retrieval in non-obese patients which is statistically significant . In 2011 a study was conducted by Barbas A and his colleagues [15] where they found significant decrease in lymph node retrieval in obese patients but Younglee [14] couldn't find any association of same with lymph node retrieval. Our findings are in agreement with Barbas A.

Manual lymph node dissection is the current standard at most institutions, and was also used in the present study. Since 1938, the fat clearance technique was used [16],other similar methods have been developed to isolate lymph nodes in surgical specimens. Although there has been varia¬tion in consistency among the different methods regarding harvesting and processing of lymph nodes, the fat clearance technique could be used for patients at risk of under stag¬ing [17,18]. A multivariate model of the present study revealed that in patients of the CCRT group with higher BMI, fewer lymph nodes were retrieved. For such patients, the fat clear¬ance technique might deserve special consideration.

CONCLUSION

- BMI of patient has statistically significant association with lymph node retrieval.
- Age and gender has no association with lymph node retrieval
- A colorectal service with higher volume of disease will always get a better yield of lymph nodes and provide better quality of life to these patients.

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