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Research Article

Incidence of Colorectal Cancer in Makkah, Saudi Arabia:A Two year study

Hassan Adnan Bukhari [1]*, Hanaa Hamed Mohammed Alhamed [2],

1 Department of Surgery, Umm ALQura University, Makkah, Saudi Arabia

2 Alnoor Specialist Hospital, Makkah, Saudi Arabia

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***Corresponding author:**
Hassan Adnan Bukhari
E: Hambukhari@uqu.edu.sa

ABSTRACT

Purpose: The western lifestyle increases risk of colorectal cancer by nutritional and socioeconomic factors. Colorectal cancer is a frequent disease and increases the overall mortality rate. It can be preventable from earlier to late-stage and can be detected earlier, specifically if there is a good screening program. The study aims to prospectively analyze the prevalence of colorectal cancer in the Makkah region, Saudi Arabia from January 2013 to December 2015.

Methods: A descriptive cross-sectional study design was used undertaking 127 patients diagnosed with colorectal cancer in four government hospitals in Makkah Al-Mukarramah, Saudi Arabia. Data were collected prospectively from Al-Noor Specialist Hospital (NSH), King Faisal Hospital (KFH), King Abdul-Aziz University Hospital (KAUH) and Heraa General Hospital (HGH). Chi-square analysis and One-Way ANOVA were used to analyze the data.

Results: The specimens of majority of patients were collected from the endoscopic unit (60.6%) and (39.4%) from the operation room (OR). Most tumors (73.2%) were located in the colon, of which 22.8% where located in the right colon, 42.5% in the left colon and 7.9% of the tumors, the location was not labelled. No statistically significant difference was found between demographics and anatomical location.

Conclusion: Colorectal cancer is considered as a preventable tumor because the lesions emerge from precancerous polyps and other identifiable procedures. Therefore, every effort must be

INTRODUCTION

Cancer appears as a major stress on the healthcare systems in both developing and developed countries. Its treatment requires the mobilization of massive resources and highly sophisticated expertise. It also has a major influence on the socio-economic lives of affected individuals (Alsanea et al., 2015) Globally, colorectal cancer is the 3rd deadliest cancer ever recognized among the males and 4th commonest cancer among females because the tumor grows off the mucosal surface, which makes it asymptomatic until it become sizable (Rami., 2017). Age is one of the major risk factors for sporadic colorectal cancer. It is rarely found before the age of 40, but frequently reported between the ages of 40 and 50 years, and age-particular occurrence rates increased in each subsequent decade thereafter (Aljebreen., 2007). High levels of triglycerides, a diet rich in fat and low in fiber, diabetes, alcohol, obesity, physical inactivity, and smoking are the major risk factors after the age of colorectal cancer. Hereditary factors play an important role, but the contribution of gene-environmental interactions cannot be ignored (Shaik et al., 2015).

Globally, the prevalence of colorectal cancer is widely distributed being higher in Australia, Northern and Western Europe, and North America. A rare prevalence is reported in developing countries such as in Asian and African countries (Aljumah et al., 2017). Almost 9.4% of all incidental cancers in males and 10.1% in females, respectively are represented by colorectal cancer (Aljumah et al., 2017). According to the statistics of the Cancer Incidence Report in Saudi Arabia, colorectal cancer is developed among women much earlier than men (45–59 vs. 60-74 years). The highest age-standardized prevalence rates have been identified in five geographic regions of Saudi Arabia such as Eastern (100.8 per 100,000), Riyadh (94.8 per 100,000), Makkah (77 per 100,000), Northern (71.3 per 100,000), and Tabuk (66.7 per 100,000) regions. However, no particular reason was identified for sporadic events in prevalence rates in different regions of Saudi Arabia (Guraya., 2018).

In 2014, 753 new cases of colorectal cancer were diagnosed and reported in Saudi Arabian males and 594 cases in females.

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The median age was 70 years in men and 48 years in women at the time of diagnosis (Alhamoud., 2015).The age-standardized prevalence rate was 10.6/100,000 men and 8.2/100,000 women based on subjects diagnosed from 13 geographic sites (Alhamoud., 2015). According to the World Health Organization (WHO), the age-standardized mortality rate, in 2004, was 8.3 per 100,000 residents from colorectal cancer in Saudi Arabia (Hassanain et al., 2016). In 2003, the prevalence of colorectal cancer was 6.6 per 100,000 residents, which increased to over 12% (per 100,000 inhabitants) in 2008 (Al Mutawah et al., 2018). In the next two decades, the incidence of colorectal cancer is expected to rise by almost 70%. The risk of developing colorectal cancer differs majorly between geographical regions and within populations. In Saudi Arabia, several elements of carcinogenesis have been addressed in colon cancer by different studies (Alomair et al., 2018).

However, the paucity of recent evidence regarding the prevalence of colorectal cancer warrants a need to investigate the increasing risk of this disease in the Kingdom of Saudi Arabia. Past literature provides insights regarding the incidence; (Alsanea N, 2015; Rami., 2017; Guraya SY, 2018). patterns;3 knowledge, attitude, and practice9 (KAB) of colorectal cancer, retrospectively. To the best of the author's knowledge, this is the first study to prospectively analyze the prevalence of colorectal cancer in the Makkah region, Saudi Arabia from January 2013 to December 2015.

2. MATERIALS AND METHODS

This study was carried out in full compliance with the guidelines of the clinical practice of the World Medical Assembly Declaration of Helsinki and the research guidelines of the King Abdul-Aziz University Hospital (KAUH), Jeddah. The study was approved by the Ministry of Health (MOH) and health affairs, Saudi Arabia.

A cross-sectional descriptive study of all colorectal cancers diagnosed in Makkah Al-Mukarramah was conducted during the period of January 2013 to December 2015 in four government hospitals including Al-Noor Specialist Hospital (NSH), King Faisal Hospital (KFH), King Abdul-Aziz University Hospital (KAUH), and Heraa General Hospital (HGH).

The inclusion of 127 patients was based on (1) adult patients (25-80 years old) diagnosed with colorectal cancer either on histological or endoscopic criteria, and (2) patients undergoing screening colonoscopy examination with normal colonoscopy procedures. Patients who had used antibiotics two weeks before the colonoscopy; patients with obstruction at diagnosis; and visitors and pilgrim patients were excluded.

Demographic and clinical data were collected from all patients including gender, nationality, affiliation with the hospital, year of diagnosis, source of the specimen, anatomical side of tumor either colon, rectum or colorectal. The data were entered in the Microsoft Excel file and analyzed using Statistical Program of Social Sciences (SPSS) version 21. Demographic data were presented using descriptive statistics such as frequencies and percentages. Pearson Chi-Square analysis was used to determine the relationship between clinical and demographic data. Lastly, One-way ANOVA was used to identify the association between age and anatomical site of the tumor.

3. RESULTS

Table 1 presents the demographic and clinical characteristics of patients. Out of 127 patients, 59.1% of the patients were male and 40.9% of the patients were female. A total of 72.4% of the patients were Saudi residents, while 27.6% of the patients were non-Saudi patients. A total of 48.8% of participants were affiliated with NSH, followed by HGH (33.1%), KFH (10.2%), and KAUH (7.9%). The majority of patients were enrolled in the year 2015 (40.2%), in the endoscopic unit (60.6%), and reported tumors in the colon region (73.2%). Table 2 presents the relationship between demographic variables and anatomical location. The prevalence of tumors in the colon region was much higher in male participants (59.1%) as compared to female participants (40.9%). Both Saudi (74.2%) and non-Saudi patients reported tumors in the colon region. Tumors in the colon region were also reported in patients affiliated with KFH (46.2%) and in an operation unit (51.6%). Table 3 presents the one-way ANOVA for identifying the relationship between age and anatomical location. The findings have shown an insignificant relationship between age and anatomical location (P >0.001).

Table 1. Demographic and clinical characteristics

Variables		Frequency	Percentage
Gender			
	Male	75	59.1
	Female	52	40.9
Nationality			
	Saudi	92	72.4
	Non-Saudi	35	27.6
Affiliation			
	NSH	62	48.8
	KAUH	10	7.9
	HGH	42	33.1
	KFH	13	10.2
Year			
	2013	33	26
	2014	43	33.9
	2015	51	40.2
Specimen			
	Endoscopic unit	77	60.6
	Operational unit	50	39.4
Anatomical side			
	Rectal	27	21.3
	Colon	93	73.2
	Mixed	7	5.5
Side			
	Right	29	22.8
	Left	54	42.5
	Rectal	27	21.3
	Mixed	7	5.5

Table 2. Relationship between demographic variables and anatomical location

		Anatomical location			p-value
		Rectal	Colon	Mixed	
Gender					
	Male	16 (59.3%)	55 (59.1%)	4 (57.1%)	0.994
	Female	11 (40.7%)	38 (40.9%)	3 (42.9%)	
Nationality					
	Saudi	16 (59.3%)	69 (74.2%)	7 (100%)	0.076
	Non-Saudi	11 (40.7%)	24 (25.8%)	0 (0%)	
Affiliation					
	NSH	16 (59.3%)	43 (46.2%)	3 (42.9%)	0.239
	KAUH	0 (0%)	(9.7%) 9	1 (14.3%)	
	HGH	10 (37%)	10 (10.8%)	1 (14.3%)	
	KFH	1 (3.7%)	31 (33.3%)	2 (28.6%)	
Year					
	2013	4 (14.8%)	29 (31.2%)	0 (0%)	0.052
	2014	14 (51.9%)	(29%) 27	2 (28.6%)	
	2015	9 (33.3%)	37 (39.8%)	5 (71.4%)	
Source of Specimen					
	Endoscopic unit	25 (92.6%)	45 (48.4%)	7 (100%)	0.000
	Operation unit	2 (7.4%)	48 (51.6%)	0 (0%)	
Side					
	Right	0 (0%)	29 (34.9%)	0 (0%)	0.000
	Left	0 (0%)	54 (65.1%)	0 (0%)	
	Rectal	27 (100%)	0 (0%)	0 (0%)	
	Mixed	0 (0%)	0 (0%)	7 (100%)	

Table 3. One-way ANOVA between age and anatomical location

		Sum of Squares	df	Mean Square	F	Sig.
Age * Anatomical	Between Groups (Combined)	763.633	2	381.816	1.701	0.187
	Within Groups	27836.07	124	224.484		
	Total	28599.70	126			

Abbreviations: NSH, Al-Noor Specialist Hospital; KFH, King Faisal Hospital; KAUH, King Abdul-Aziz University Hospital; HGH, Heraa General Hospital; OR, Operation Room; MOH, Ministry of Health; SPSS, Statistical Package of Social Sciences

4. DISCUSSION

Colorectal cancer is the commonest cancer in Saudi Arabia and accounted for significant mortality rates as well as high cumulative health care costs. As per the researcher's knowledge, there was no similar study conducted regarding the demography of colorectal cancer in Makkah Al-Mukarramah. Early detection of such cancer can play a vital role in preventing and decreasing serious complications and mortality. A total of 59.1% of patients were males and 40.9% were females which were supported by Sibiani et al., (2011), who showed a similar proportion in the data conducted during 2005-2009. The mean age was 57.52 ± 15.066 (range from 28-79 years old), which was also supported by Sibiani et al., (2011) who showed male patients older than female patients at the time of diagnosis (Baber et al., 2014). also showed 98.6% of male patients in the sample with a mean age of 68.9, which exceeds the mean age found in this study.

A total of 40.2% cases were reported in 2015 as compared to 26% in 2013, which shows an increase in the number of cases per year. The data were collected from the histopathology unit, which showed 60.6% of samples from the endoscopic unit, while the remaining 39.4% of samples were from the OR. A total of 92.6% of rectal cancer samples were from the endoscopic unit and 51.6% of colon cancer sample was from OR, which can be explained by an emergency presentation of colon cancer in elderly patients as mean age was 57.52. (Amin et all., 2012). contradicted the findings of the present study by arguing that the emergency room was the main referral of patients diagnosed with the colorectal sample.

This study has found 73.2% of the tumor in the colon region, while 42.5% of the tumor was found in the left colon, which was supported by a study conducted in Qatar (Rasul et al., 2001). The rest of the tumor was reported in the rectum (21.31%). Omranipour et al (Omranipour et al., 2012)

showed that 64.5% of the sample was diagnosed within the rectum, which contradicts the findings of the present study. Mostly colon and rectum locations were reported among male patients (59.1% vs. 59.3%), respectively. There was a substantial difference of 9.6% between the male five-year OS and the female five-year OS. Furthermore, gender is considered as a significant prognostic factor of survival in patients with rectal cancer. It is due to the fact that the lifetime risk of dying from colorectal cancer is similar in both males and females because life expectancy is on a higher average in women as compared to men (Alhamoud S., 2015) The study has found no statistically significant difference between gender and anatomical distribution, which was supported by Cai et al (Cai et al., 2014). This finding was also supported by Omranipour et al (Omranipour et al., 2012) who found no significant difference between demographic data and anatomical site of the tumor.

Colorectal cancer is considered as a preventable tumor because the lesions emerge from precancerous polyps and other identifiable procedures. Therefore, every effort must be made for recognizing both the presence of these lesions and those with inflammatory bowel disease. It is recommended to integrate a national screening program in Saudi Arabia to further improve the prevalence of colorectal cancer and to increase the survival rates globally. This study faced a limitation in collecting data in each hospital as limited cancer cases were available since 2013. It is, therefore, recommended to remove all these biases by evaluating the result in a prospective study and try to apply a screening program for colorectal cancer.

5. CONCLUSION AND RECOMMENDATION

There was an increasing prevalence of colorectal cancer in patients from 2013 to 2015. NSH reported higher incidental events of colorectal cancer in 2015. This increase in the numbers of colorectal cancer diagnosis could be due to increase in the incidence of cancer, because there is a survey done in 2016 by Bukhari and Mirza was published in 2016, which showed > 50% of participant did not hear anything about screening program for colorectal cancer and > 80% never had colonoscopy. No statistically significant difference was shown between the gender and anatomical side of cancer. The mean age of patients showed a lack in the screening program for colorectal cancer. The development of a screening program and increased access to specialized medical departments might be essential for improving colorectal survival in Saudi Arabia.

AUTHOR CONTRIBUTION

Study design, data collection, analysis and writing/editing the manuscript

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CONFLICT OF INTEREST

The authors report no conflicts of interest in this work.

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