

Synchronous Colorectal Neoplasias: A Single Hospital Study

Dalal Nemenqani^{1,2}

¹Department of Pathology, College of Medicine, Taif University

²Department of Pathology King Abdulaziz Specialist Hospital

e-mail: dnemenqani@hotmail.com

ABSTRACT

Background and the aim of the study: The presence of more than one primary tumor in the colon at time of presentation is diagnosed as colorectal synchronous neoplasias (SN) and the largest one is considered the index tumor. The aim of this study is to identify the magnitude of synchronous colorectal neoplasias and its relation to different variables as pattern of presentation, age, gender and histopathology in addition to evaluation of different methods of diagnosis in patients presented to King Abdul Aziz Specialist Hospital, Taif, Saudi Arabia.

Patients and methods: This is a retrospective chart review study. The hospital records and the files of all patients diagnosed to have colonic neoplasms were reviewed from January 2008 to August 2014.

Results: The study involved 87 patients, 53 males and 34 females. Ten of the 87 patients (6 males and 4 females) had synchronous colonic neoplasms (11.5%). Intestinal obstruction was the presenting symptom in 4/10 patients (40%, Vs 35.6% in patient with single lesion), rectal bleeding in 4/10 patients (40%) and in 20% mass in right lower quadrant was the presenting symptom. In obstructed patients, SN was diagnosed after examination of the operative specimen, however; intra-operative palpation detected multiple colonic polypi in one patient and intra-operative colonoscopy detected SN in another 2 patients. In the non obstructed patients preoperative colonoscopy and biopsy diagnosed multiple lesions in 5/6 of the patients (83.3%). Pre and intra-operative colonoscopy helped to guide accurately the extent of resection in 83.3% of non obstructed patients and in 75% of obstructed patients respectively. Mean period of follow up was 3.4±0.8 years.

Conclusion: The incidence of SN is significantly higher in this study than that recorded in English literature, so a larger study involving all regions of Saudi Arabia is strongly recommended as the presence of SN worsens the prognosis entailing modification of the treatment options. Thorough pathological examination is mandatory of any doubtful colonic lesions, and the study verified the effectiveness of preoperative colonoscopy in patients with non obstructed colorectal cancer and intra-operative colonoscopy in obstructed patients for visualization and biopsy of these lesions.

Keywords: colorectal tumors, synchronous tumors, colonoscopy, Taif

INTRODUCTION

Synchronous neoplasia (SN) of the colon and the rectum means the presence of more than one primary tumor at time of presentation and the largest one is considered the index tumor.⁽¹⁾ Preoperative colonoscopy, virtual colonoscopy, and intra-operative colonoscopy are the usual methods to diagnose synchronous colorectal neoplasia.⁽²⁻⁴⁾ The incidence of SN recorded in English literature is less than 5% and the villous adenomas is the commonest SN with index cancer.⁽⁴⁻⁸⁾ Presence of SN would modify the treatment options to perform more extended colectomy or to combine colectomy with trans-anal resection or ablation.⁽⁹⁻¹¹⁾ The presence of SN carries a worse prognosis compared with that of patients with solitary neoplasm; however,

early discovery and prompt management will improve the outcome.⁽⁵⁻¹¹⁾

The aim of this study is to identify the magnitude of synchronous colorectal neoplasias and its relation to different variables as pattern of presentation, age, gender and histopathology in addition to evaluation of different methods of diagnosis in patients presented to King Abdul Aziz Specialist Hospital, Taif, Saudi Arabia.

PATIENTS AND METHODS

This is a retrospective chart review study based upon reviewing the records of all patients presented to King Abdul Aziz Specialist Hospital from January 2008 to August 2014 and diagnosed to have colonic neoplasms.

After approval of ethical committee of the hospital and taking informed consents from patients or their relatives to use the data and images in their hospital records, data were collected from the patient files focusing on demographic factors, pattern of presentation, colonoscopic, histopathology, and imaging reports in addition to operative findings, postoperative course and follow up charts.

Data were gathered and analyzed and records which were found incomplete or could not be properly evaluated were excluded from the study. After coding and tabulation of the collected data, statistical analysis was performed using SPSS program version 18.0. Descriptive statistics were done and qualitative data were expressed as number, percentage and mean \pm standard deviation.

Quantitative variables were analyzed using Mc Nemar test for agreement between paired categorical data. The probability that the study results have occurred by chance and the degree of significance was taken at P value which is considered significant if < 0.050 and non significant if higher.

RESULTS

Demographic and clinical data are shown in (Table 1). The study involved 87 patients with mean age of 67.8 ± 16.3 years. They were 53 males and 34 females. Ten (6 males and 4 females) of the 87 patients (11.5%) were diagnosed to have synchronous colorectal tumors. The mean age of patients with SN was 71 ± 17.8 years.

Four of the ten patients (40%) presented by intestinal obstruction and pathological diagnosis of SN was achieved after examination of the operative specimen.

During operation, palpation of the colon distal to obstruction revealed multiple palpable small masses in one patient and intra-operative colonoscopy was performed, where the distal colon was studded with innumerable polypi, so total procto-colectomy was done.

Intra-operative colonoscopy when used detected SN in another 2 patients which were not detected by palpation alone.

In 4/10 patients (40%), the presentation was bleeding per rectum and in the other 2 patients (20%), the presentation was mass in right lower quadrant.

Preoperative colonoscopic diagnosis of multiple lesions were done in 5/6 of the non-obstructed patients (83.3%) and in the 6th case the colonoscopy failed to detect multiple lesions as it was proximal to large index cancer, however; SN was diagnosed after pathological examination of the operative specimen. Pre and intra-operative colonoscopy helped to guide accurately the extent of resection in 83.3% of the non-obstructed patients and in 75% of obstructed patients respectively (Figure 1-3). Mean period of follow up was 3.4 ± 0.8 years. During follow up local or/and distal recurrence was detected in 7 patients (70%) with SN of them 3 patients died. In the same period local or/and distal recurrence was detected in 32/77 patients (41.6%) with solitary lesion, of them 18 patients died (Table 1 and Figure 4). The index tumor is detected in 60% of cases in cecum and the SN was detected in different surgical segment (rectosigmoid segment). The nature of detected SN is shown in Figure 5.

DISCUSSION

Preoperative or operative diagnosis of SN of the colon is essential to avoid the hazards of surgical re-intervention.⁽⁴⁾ Preoperative colonoscopy or virtual colonoscopy is the usual method to diagnose SN in non obstructed patients.⁽²⁻⁴⁾ In obstructed patients preoperative virtual colonoscopy is the gold standard but when it is not available, the surgeon depends on intra-operative palpation.⁽³⁾ The sensitivity of the intra-operative palpation doesn't exceed 30%, however, its diagnostic reliability could be improved if combined with intra-operative colonoscopy.^(3, 4) Şavlovski *et al.*⁽⁴⁾, found that combined intra-operative manual palpation with colonoscopic examination are essential to detect any SN avoiding surgical re-intervention.⁽²⁾ In the present study; pre operative colonoscopy helped to guide accurately the extent of resection in 83.3% of non obstructed patients and though the intra-operative palpation alone, detected SN in only 25% of obstructed patients, the use of intra-operative colonoscope, detected SN in another 2 patient raising the percent of intra-operative diagnosis to 75% of those patients.

The incidence of SN in English literature varies between 2-5%.⁽⁵⁾ In our study, the incidence of SN was 11.5% which is much more higher than

reported in other studies. Mulder *et al.*⁽¹⁰⁾ in their study found that 534 patients (3.9%) had SN out of 13,683 patients with diagnosis of colorectal cancer, with higher incidence in men than in women, and in patients over 70 years. Latournerie *et al.*⁽¹¹⁾ found in their large study on 15,562 colorectal cancer patients that the incidence of SN was 3.8%, and the incidence was higher in patients above 65 years and in men than in women. In our study there was no significant statistical difference regarding the age and sex factors in patients with SN and patients with solitary tumor. The difference between our results and the results of literature can be attributed in part to the smaller number of patient in our series but, environmental, genetic, and dietary factors may contribute and have to be excluded by larger studies. Unfortunately, the current national magnitude of SN in KSA is not known and only the results of few focal studies were reported.⁽¹²⁾

Most of the investigators found no significant variation in the mode of presentation in patients with SN and those with solitary neoplasms,⁽²⁻⁵⁾ which is in agreement with our findings.

In more than 50% , villous adenomas was found to be the most common SN with index cancer (nearly always adenocarcinomas); however, malignant SN are very rare, with incidence less than 0.5% for 2-3 synchronous lesions, and less than 0.2% for 4 or more lesions.⁽⁴⁻⁸⁾ In our study, all the index cancers were adenocarcinomas with little difference from the findings in literature.

However, the SN was tubulovillous adenomas in 60% of our cases, villous adenoma in 20% of cases, and tubular adenoma in the other 20% and no synchronous malignancy was detected. The previous findings are quite different from that recorded in literature and it must be verified by larger studies.

There is a higher incidence of left colon SN if the index cancer is present in the caecum than that if present in left colon.⁽⁹⁾ These findings are in agreement with our study, where the primary cancer was found in 60% of cases in cecum and SN was detected in rectosigmoid segments.

Mulder *et al.*⁽¹⁰⁾ revealed that in more than thirty per cent, the SN were located in different surgical segments, so the surgical approach must be modified. Latournerie *et al.*⁽¹¹⁾ verified in

their large study that the SN were found in the different intestinal segment in about 45% of patients. Presence of SN would modify the treatment options to perform more extended colectomy or to combine colectomy with trans-anal resection or ablation⁽⁹⁻¹²⁾. In the present study the index cancer and SN were found in 60% of cases in different colonic segments indicating total or subtotal colectomy which is significantly higher than that recorded in literature.

Most of the investigators agreed that the presence of SN carries a worse prognosis with less five-year relative survival compared with that of patients with solitary neoplasm.⁽⁵⁻¹¹⁾ Mulder *et al.*⁽¹⁰⁾ and Latournerie *et al.*⁽¹¹⁾ related that worse outcome to the higher incidence of developing metastases in patients with SN than in patients with solitary colorectal tumor. In this study, local or/and distant recurrence was significantly higher in patients with SN than in patients with solitary tumor. The mortality was higher in the SN patients but this finding was statistically insignificant. These findings are in agreement with that reported in the literature.⁽⁵⁻¹¹⁾

CONCLUSION

The incidence of SN is significantly higher in this study than that recorded in English literature, so a larger study involving all regions of Saudi Arabia is strongly recommended as the presence of SN worsens the prognosis entailing modification of the treatment options. Thorough pathological examination is mandatory of any doubtful colonic lesions, and the study verified the effectiveness of preoperative colonoscopy in patients with non obstructed colorectal cancer and intra-operative colonoscopy in obstructed patients for visualization and biopsy of these lesions.

Acknowledgement: To the departments of gastrointestinal endoscopy and department of surgery for their cooperation.

Conflicts of Interest: The author declares that she has no conflicts of interest.

Author contributions

Dr Dalal Nemenqani: did the pathological examination, collected data and wrote the paper. The requirements for authorship have been met, and the author believes that the manuscript represents honest work.

REFERENCES

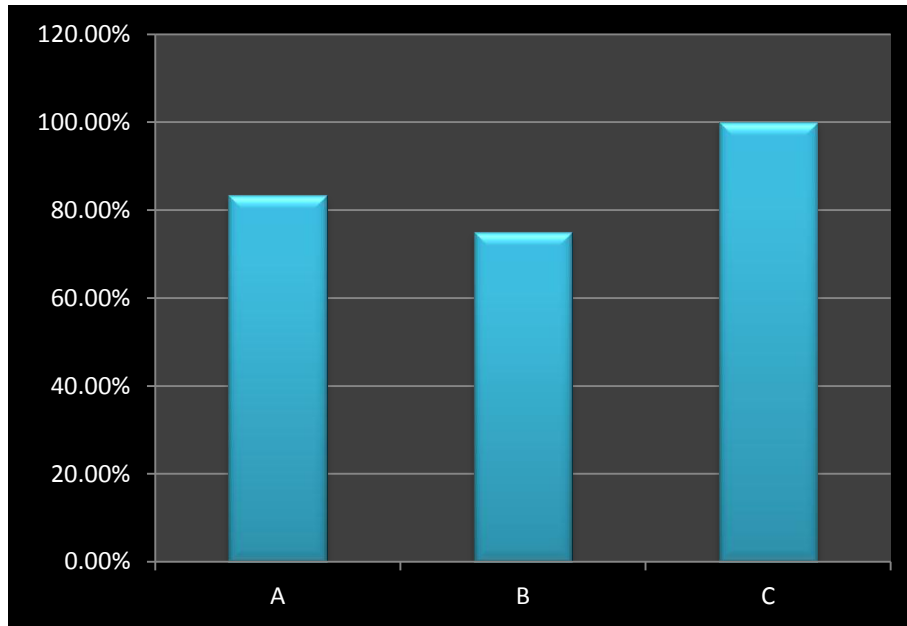
1. **Larsson SC, Wolk A (2006).** Meat consumption and risk of colorectal cancer: a metaanalysis of prospective studies. *Int J Cancer*,119: 2657-64.
2. **Banai Z, Berczi L (2014).**The surgical case of a 34-year-old female patient with a metastasizing double colon tumor with different histological structure, causing mechanical obstruction. *Magy Seb.*, 67:44-7
3. **Hummel JM, Steuten LG, Groothuis-Oudshoorn CJ, Mulder N, Ijzerman MJ (2013).**Preferences for colorectal cancer screening techniques and intention to attend: a multi-criteria decision analysis. *Appl Health Econ Health Policy*.,11:499-507.
4. **Şavlovschi C, Comandaşu M, Şerban D (2013).** Specifics of diagnosis and treatment in synchronous colorectal cancers (SCC). *Chirurgia (Bucur)*.,108: 43-5.
5. **Wortley S, Wong G, Kieu A, Howard K (2014).** Assessing stated preferences for colorectal cancer screening: a critical systematic review of discrete choice experiments. *Patient*,7: 271-82.
6. **Keighley MRB (2003).** Gastrointestinal cancers in Europe. *Aliment Pharmacol Ther.*,18:7-30.
7. **Stryker SJ, Wolff BG, Culp CE, et al (1987).** Natural history of untreated colonic polyps. *Gastroenterology*.,93:1009-18.
8. **Fuchs CS, Giovannucci EL, Colditz GA, et al (1994).** A prospective study of family history and the risk of colorectal cancer. *N Engl J Med.*, 331:1665-9.
9. **John DJB, McDermott FT, Hopper JL, et al (1993).** Cancer risk in relatives of patients with common colorectal cancer. *Ann. Intern. Med.*,118:785.10.
10. **Mulder SA, Kranse R, Damhuis RA, de Wilt JH, Ouwendijk RJ, Kuipers EJ, et al. (2011).** Prevalence and prognosis of synchronous colorectal cancer: a Dutch population-based study. *Cancer Epidemiol.*,35:442-7.
11. **Latournerie M, Jooste V, Cottet V, Lepage C, Faivre J, Bouvier AM (2008).**Epidemiology and prognosis of synchronous colorectal cancers. *Br J Surg.*,9:1528-33.
12. **National Cancer Registry (2001).** Cancer Incidence Report, Saudi Arabia1994-2001. Ministry of Health: Riyadh (KSA)., 2001: 48-9.

Table 1: showing patient characteristics

	Patients with SN	Patients with solitary tumor	P-value	Significance
Total number	10/87 (11.5%)	77/87 (88.5%)		
Males	6/10 (60%)	48/77 (62.3%)	0.086	NS
Females	4/10 (40%)	29/77 (37.7%)	0.079	NS
Age (mean in years)	71±17.8	66.3±15.1	0.053	NS
Presentation				
• Obstructed	4/10(40%)	31/77(40.3%)	0.089	NS
• Non obstructed	6/10(60%)	46/31(59.7%)	0.098	NS
Recurrence	7/10(70%)	32/77(41.6%)	0.024	S
mortality	3/10(30%)	18/77(23.4%)	0.034	NS

S: significant – NS: Non Significant

Figure 1: method of diagnosis of SN



A: Preoperative colonoscopy in (83.3%) of non-obstructed patients, **B:** Intra-operative (palpation and colonoscopy) in (75%) of obstructed patients, and **C:** Postoperative examination of the specimen, diagnosed and confirmed diagnosis in (100%) of cases.

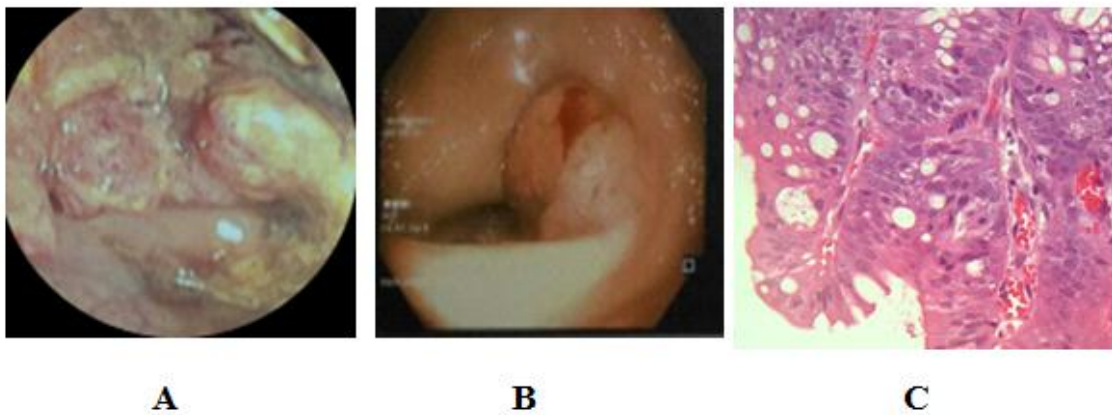


Figure 2: **A;** Colonoscopy showing ulcerating lesion in the caecum (histopathology proved to be adenocarcinoma), **B;** synchronous bleeding sigmoid polyp, **C;** biopsy from the sigmoid polyp shows simple crypt like dysplastic glands with villous component that resemble finger-like projections indicating tubulovillous adenoma. (H/E stain, original magnification $\times 100$).

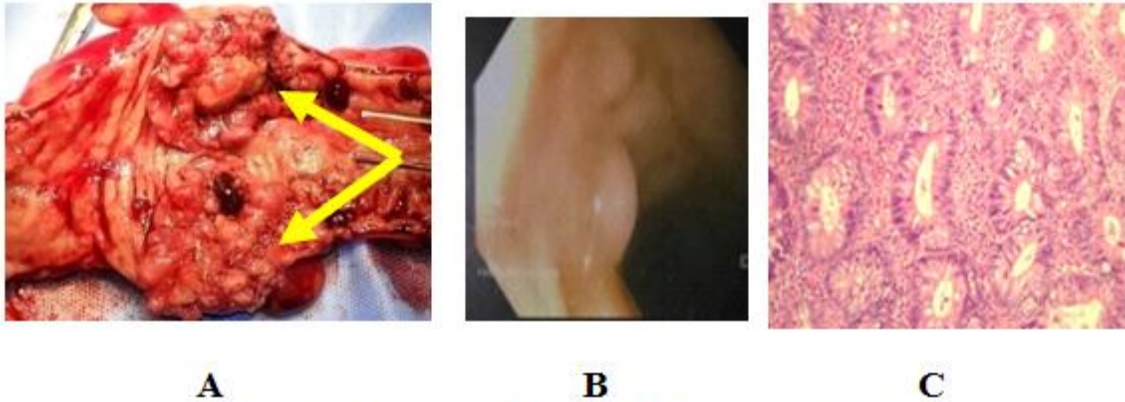


Figure 3: **A;** Surgically resected sigmoid tumor, the arrows refer to irregularly nodular and hemorrhagic surface (histopathology proved to be adenocarcinoma), **B;** colonoscopy revealing 2 sessile polyps in rectum, **C;** The histopathology of the resected polyps showing simple dysplastic glandular structures indicating tubular adenoma. (H/E stain, original magnification $\times 100$).

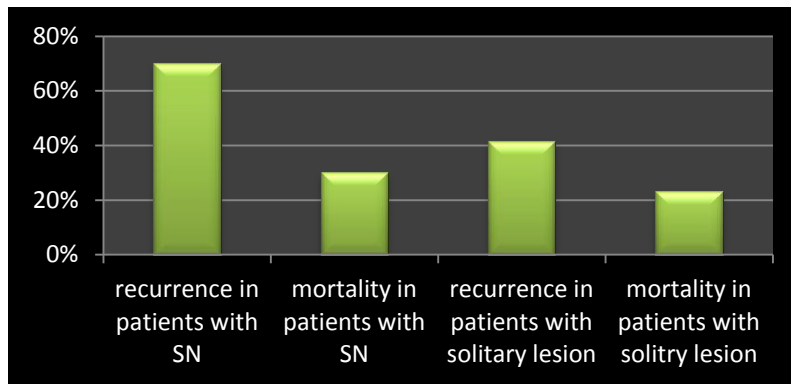


Figure 4: Recurrence and mortality in patients with SN and solitary lesion

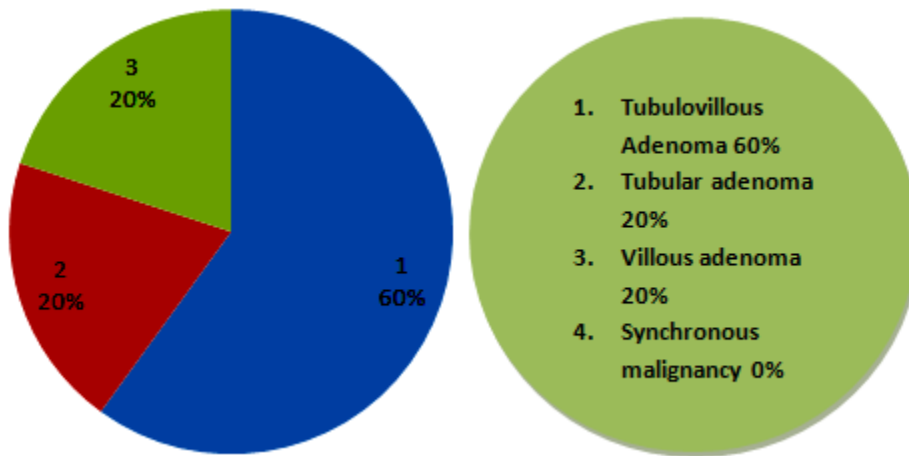


Figure 5: Showing the nature of SN detected in this study