

Incidence, Treatment and Outcomes of Patients with Synchronous Lung and Colorectal Malignancies: A Nationwide Inpatient Sample Database (NIS) Analysis

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Introduction

Lung Cancer (LC) remains the leading cause of cancer-related deaths, with Colorectal Cancer (CRC) being the third leading cause of cancer-related deaths in the US. Patients diagnosed with metastatic CRC may have tumors arising in locations such as the liver, lungs, and peritoneum. Although CRC and lung cancer are among the most common cancers worldwide, synchronous presentation of these cancers is not very common and not well studied. Our study aims to describe the incidence, treatment, and clinical outcomes of patients with synchronous lung, and colorectal cancer.

Methods

We conducted an 11-year analysis of the Nationwide Inpatient Sample (NIS) database (2002-2012). All adult (age \geq 18y) patients admitted with a diagnosis of CRC were included. Data abstracted include demographics, malignancy-related variables, treatment, and operative interventions. We excluded patients who had lung metastasis from CRC. Our primary outcome measures were the incidence of synchronous CRC and lung cancer, operative treatment patterns, and mortality.

Data

Table 1: Baseline Characteristics of the Study Sample

Variable	CRC N=1,192,189	CRC + Lung Cancer N=6,231	P-Value
Demographics			
Age, years \pm SD	60 \pm 14	61 \pm 11	0.32
Male, %	75%	74%	0.11
White, %	67%	68%	0.38
BMI \geq 30 kg/m ²	33%	27%	0.74
Medicare	62%	61%	0.63
Medicaid	30%	27%	0.87
Private Insurance	8%	12%	0.01*
Low Income Quartile	24%	26%	0.01*
CRC Location, %			
Hepatic Flexure	2.5%	2.6%	0.17
Transverse Colon	4.8%	2.9%	0.06
Descending Colon	2.5%	10%	<0.01*
Sigmoid Colon	8%	6%	0.06
Cecum	9%	7.5%	0.64
Appendix	2%	0.3%	0.13
Ascending Colon	10%	6.2%	0.87
Splenic Flexure	2%	1%	0.32
Rectosigmoid	79%	78%	0.14
Rectum	6%	8%	0.56
Anal	2.4%	2.9%	0.74
Unspecified	0.8%	2.4%	0.01*

Table 2: Tumor Stage of the Study Sample

Tumor Stage	CRC N=1,192,189	CRC + Lung Cancer N=6,231	P-Value
I	6%	4%	0.09
II	42%	17%	<0.01*
III	21%	23%	0.77
IV	31%	56%	<0.01*

Table 3: Treatments of the Study Sample

Treatment	CRC N=1,192,189	CRC + Lung Cancer N=6,231	P-Value
Chemotherapy	36%	54%	<0.01*
Radiotherapy	17%	16%	0.07
Colectomy	25%	15%	<0.01*
Lobectomy	-	16%	

Table 4: Treatment Sequence of the Study Sample

Treatment Sequence	CRC + Lung Cancer N=6231
Treatment of Colon Cancer First	12%
Treatment of Lung Cancer First	13%
Supportive Care Alone	75%

Table 5: Outcomes for Study Sample

Outcomes	CRC N=1,192,189	CRC + Lung Cancer N=6,231	P-Value
Mortality, %	54%	65%	<0.01*

Tables 1-5: * p-values <0.05 is statistically significant

Results

Out of 1,198,421 patients admitted with a CRC diagnosis, 6,231 (0.52%) had synchronous lung cancer. Overall, mean age was 61 \pm 15y, 75% were male, and 63% were white. The majority of patients with synchronous malignancies (56%) had advanced CRC with non-small cell lung cancer (76%). The majority of CRC patients (79%) had recto-sigmoid tumors. Only 11.2% underwent surgical management. No significant difference was noted in the proportion of patients first treated for their CRC relative to those treated for their lung cancer first (p=0.21). The overall mortality rate was 54%.

Conclusion

The incidence of synchronous occurrence of CRC and lung cancer is low, but the mortality is very high. Diagnosis of synchronous cancer is typically incidental. Treatment options for these patients should be tailored to the individual patient. Genetic, biomarker and epidemiological studies are required to elucidate the potential connection between lung and colon cancer.

References

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