

Second Primary Malignancy in Gastrointestinal Stromal Tumors: Insights From a Population-Based Analysis

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Introduction

Gastrointestinal stromal tumor (GIST) are the most frequent mesenchymal neoplasms in the digestive tract. Second primary malignancies (SPM) have been reported frequently, either synchronously or during follow-up, in patients diagnosed with GIST. We analyzed the incidence and location of SPM in patients with GIST.

Methods

Using SEER data from 1975-2019 we calculated SIR and AER using SEER*Stat software (version 8.4.0.1). P-values and 95% confidence intervals (95% CI) were generated assuming poisson distribution of observed incidence of SPM.

Results

3,202 GIST patients were included. Patients with GIST had a significantly greater risk of developing SPM in any location as compared to the general population with SIR= 1.25 (95% CI= 1.11-1.39) and AER of 32.86 per 10,000 population. The most common site for SPM was the digestive tract, specifically the colon and stomach. Other locations where site-specific risk was significantly increased were the lungs, bronchus and trachea (SIR 1.69), soft tissues (SIR 5.27), skin (SIR 1.71), kidney (SIR 2.34), thyroid (SIR 4.13), and chronic myeloid leukemia (SIR 4.15). Increased risk of SPM was reported for patients aged 50-75 years (SIR= 1.28) but not for patients younger than 50 or older than 75. There was a significantly increased risk of developing SPM in all races; the SIR for Caucasians, African-Americans, and other races (American Indian/AK Native, Asian/Pacific Islander) were 1.19, 1.45, and 1.34, respectively. Increased risk of SPM was reported for latency 2-11 months (SIR 2.31) but not for latencies 12-59 months (SIR 1.06), 60-119 months (SIR 1.05), or 120+ months (SIR 1.29).

Table. 1

Location	Observed	Expected	SIR	95% CI	AER
All Sites	328	263.3	1.25#	1.11-1.39	32.86
All Solid Tumors	287	227.57	1.26#	1.12-1.42	30.18
Stomach	12	4.8	2.50#	1.29-4.37	3.66
Colon	27	17.69	1.53#	1.01-2.22	4.46
Sigmoid Colon	10	4.34	2.30#	1.1-4.24	2.87
Lung, and bronchus	60	35.46	1.69#	1.29-2.18	12.49
Skin excluding Basal and Squamous	22	12.86	1.71#	1.07-2.59	4.64
Soft Tissue including Heart	8	1.52	5.27#	2.27-10.38	3.29
Kidney	19	8.1	2.34#	1.41-3.66	5.53
Chronic Myeloid Leukemia	4	0.96	4.15#	1.13-10.62	1.54
Thyroid	16	3.87	4.13#	2.36-6.71	6.16

represents p< 0.05. SIR : Standardized incidence ratio, AER : Absolute excess risk, 95%CI : 95% Confidence Interval

Conclusion

Patients with GIST are at a high risk of developing SPM, especially tumors of the digestive and respiratory tract, along with chronic myeloid leukemia. Data suggests a higher incidence of SPM in patients aged 50-75 years and with 2-11 months latency.

