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## Presentation and Predictors of Metastatic Testicular Cancer: A Contemporary Population-Based Analysis

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# Presentation and Predictors of Metastatic Testicular Cancer: A Contemporary Population-Based Analysis

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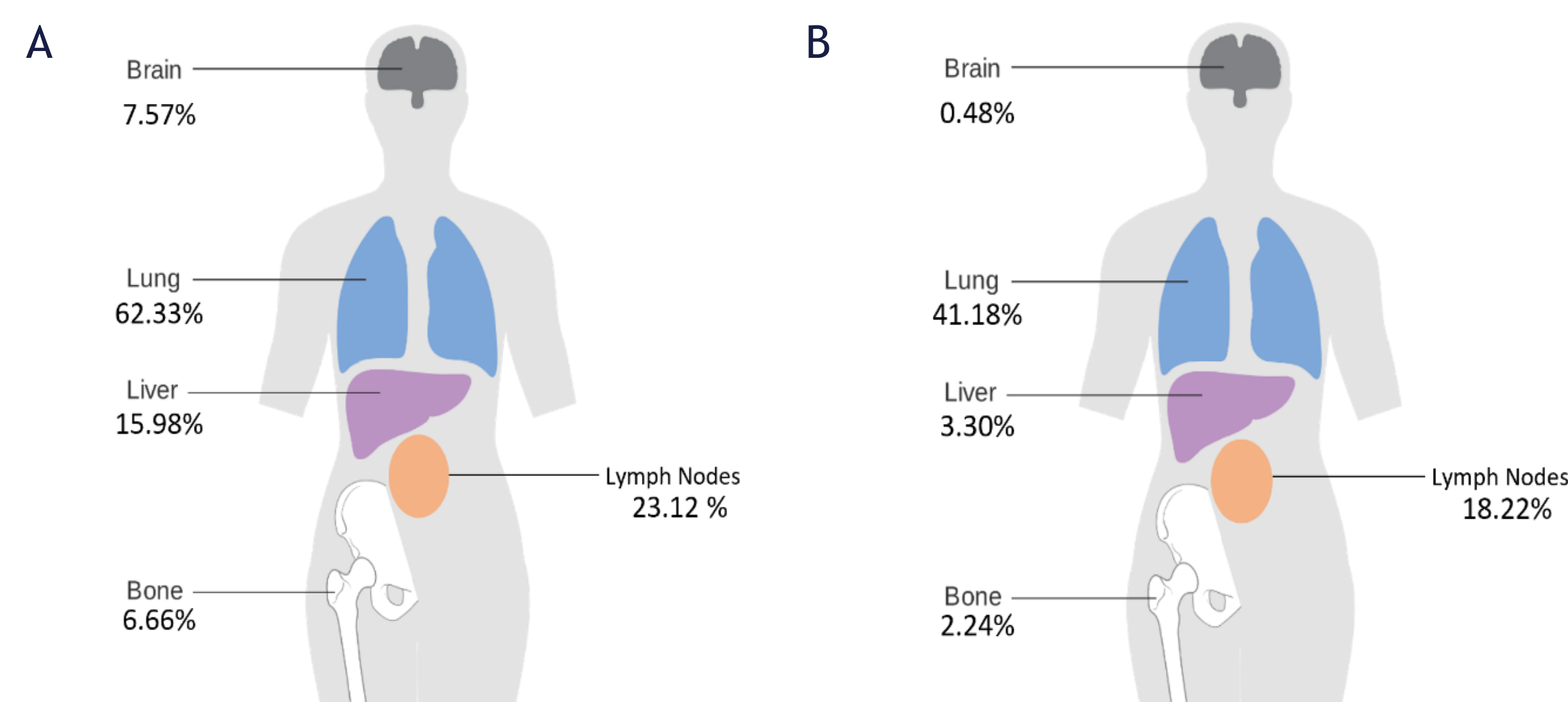
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## Introduction

- Testicular cancer (TC) is the most common solid malignancy in males aged 14-44, with incidence rising globally,<sup>1-3</sup> although there are few established risk factors besides cryptorchidism.<sup>1,4</sup>
- While 70% of men present with localized TC, 18% have regional spread and 12% have metastases. Moreover, one-third of patients diagnosed with Stage I TC actually have occult metastases.<sup>5</sup>
- Although various studies have addressed the general incidence of advanced TC, only sparse retrospective reviews have described the clinical presentation and predictors of metastasis, usually limited by small cohort size.
- This study analyzes the modern, population-based SEER database to elucidate patient-specific clinical, demographic, and social predictors of metastatic disease, and study the impact of these factors on prognosis. These factors may inform diagnosis and management of TC patients.

## Methods

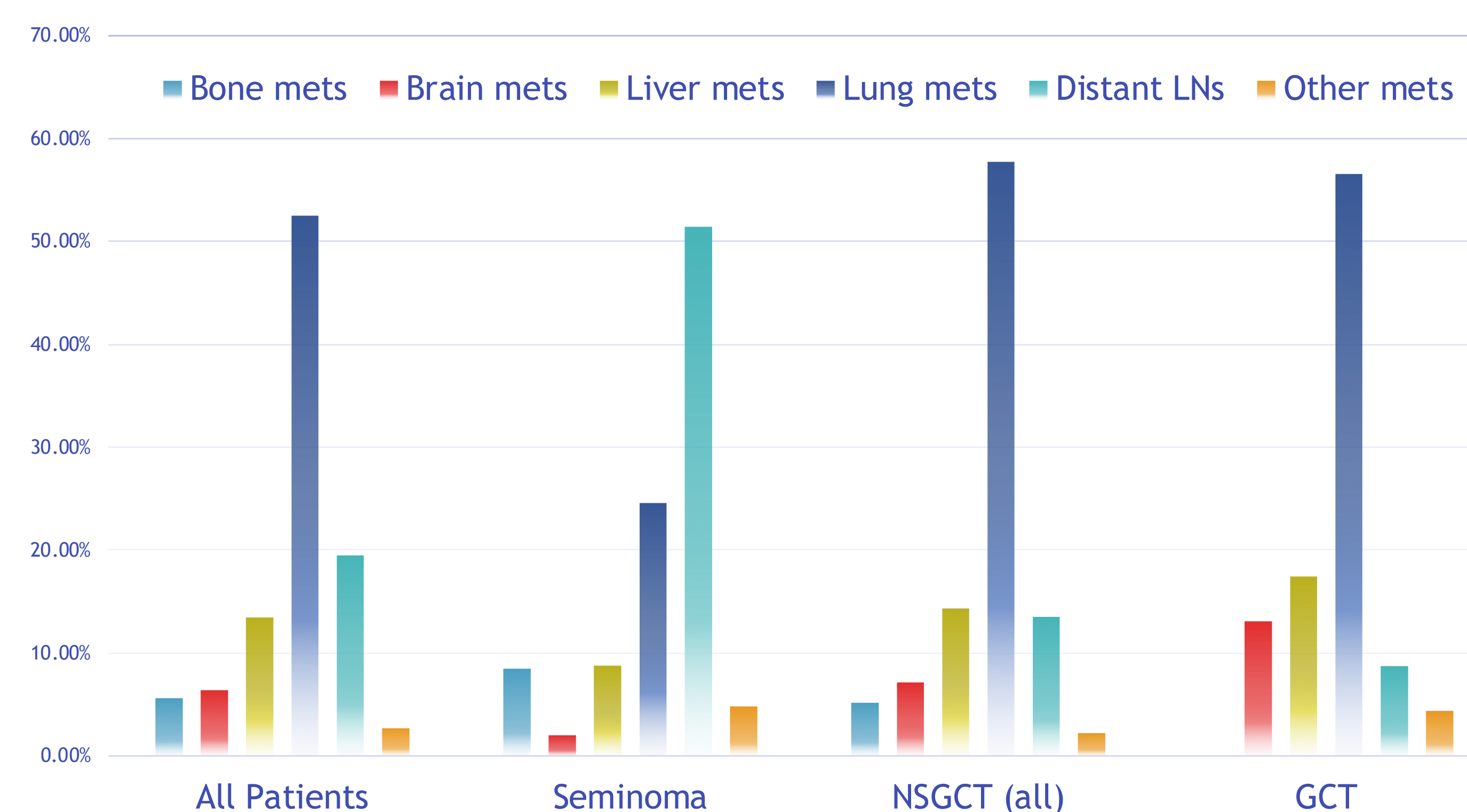
- 16,528 adult patients diagnosed from 2010-2016 with TC-specific histology codes were identified using SEER.
- Variables of interest for descriptive analysis: age at diagnosis, race, ethnicity, geographic region, insurance status, marital status, and socioeconomic status (SES)
- Disease-specific variables: clinical & pathologic stage, tumor grade, histology, primary tumor laterality & size, metastasis presence & location, and overall & cancer-specific survival
- Statistical analysis: two-tailed Fisher's exact test, Pearson chi-square test, multivariate logistic regression hazards analysis, and competing risks regression



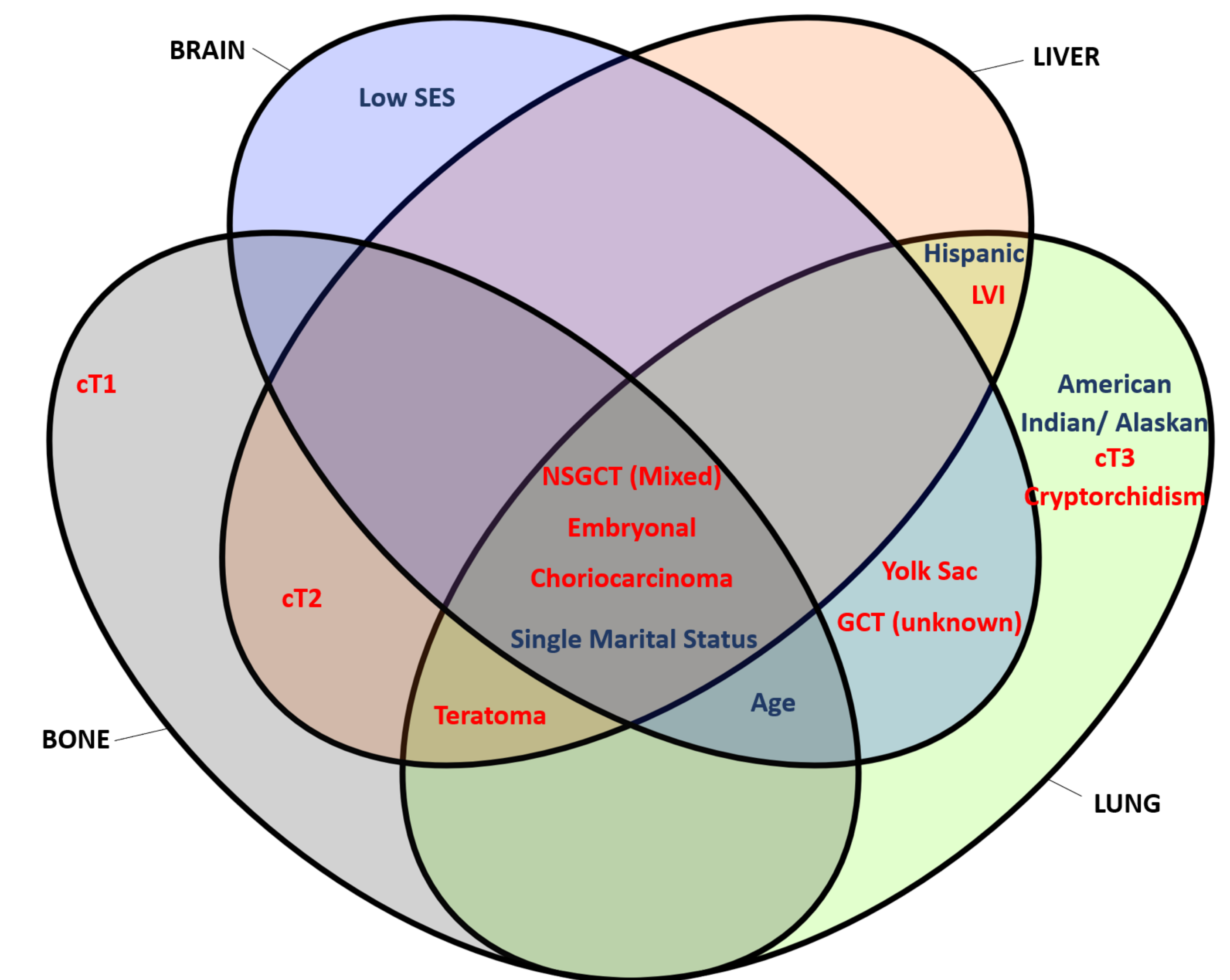
**Figure 1.** Site distribution of (A) synchronous metastases and (B) solitary metastatic disease in the absence of any other disease sites.

## Results

- Mean age of 35.23 ± 11.67; represented a national sampling of race, ethnicity, and geographic region
- Of the 16,474 patients for whom metastatic pattern data were available, 1,877 (11.39%) had metastases at diagnosis
- **Histology:** metastases less common in seminoma, but more common in choriocarcinoma and yolk sac NSGCT subtypes
- **Disease-specific:** bilateral TC and lymphovascular invasion were more likely to present with metastases
- **Demographics:** metastases more common in younger, Hispanic, and Black or American Indian/Alaskan patients, in addition to patients who were uninsured, single or separated, and of lower reported SES (all p<0.001)
- **Site:** Figure 1 and Figure 2
  - Trends largely remained consistent for NSGCT subtypes, but in embryonal and yolk sac, bone was more common and in choriocarcinoma, liver and brain increased
- **Predictors of any metastasis:** stage, NSGCT histology, tumor size, lymphovascular invasion, and cryptorchidism; age, geographic residence, ethnicity, race, SES, and marital status.
- **Predictors of specific metastatic sites:** Figure 3
- **Predictors of cancer-specific mortality:** NSGCT histology (especially yolk sac and teratoma), age, and staging; lack of insurance, single marital status, and lower SES
  - All metastatic sites except bone worsened CSM, with lung spread conferring the greatest CSM risk



**Figure 2.** Differential locations of distant metastases at TC diagnosis stratified by major histology



**Figure 3.** Significant predictors of metastases at diagnosis based on multivariable logistic regression hazard analysis

## Conclusions

Understanding predictors and distribution of TC metastasis can facilitate a risk-stratified approach to staging and management. Routine chest CT for all patients may be warranted due to high rates of lung metastases at presentation. Evaluation of SDOH may prevent delayed diagnosis and reduce TC mortality.

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**Disclosures:** None