There Is No Difference in Frequency or Outcome of Colon Ischemia Based Upon the Season of Presentation

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INTRODUCTION

Colon Ischemia (CI) is the most common ischemic injury to the gastrointestinal tract. Studies from Asia have shown a seasonal variation of CI with an increased incidence in the summer months. Our study hypothesizes that in a United States population focusing within a northeastern group of hospitals where there is a significant variation in the seasonal climate, will also show a seasonal variation in the incidence and outcome for CI.

METHODS

We conducted a multicenter retrospective cohort study of patients admitted with biopsy-proven CI admitted to Yale-New Haven Hospital, Montefiore Medical Center, Weiler Medical Center, and SUNY-Upstate Medical Center from 2005 through 2017. For each patient, demographics, medical co-morbidities, treatments, and outcomes were recorded. Using a meteorological definition of seasons, we subdivided the population into spring (SP-CI; March to May), summer (SU-CI; June to Aug), fall (FA-CI; Sept to Nov), and winter (WI-CI; Dec to Feb). We then compared the onset of CI between the seasonal cohorts. Our primary outcome was the incidence of CI based upon the season. Secondary outcomes included the combination of 30-day colectomy, mortality or both which was defined as combined poor outcome, segmental involvement, intensive care unit (ICU) requirements, and 30-day readmission and recurrence rates.
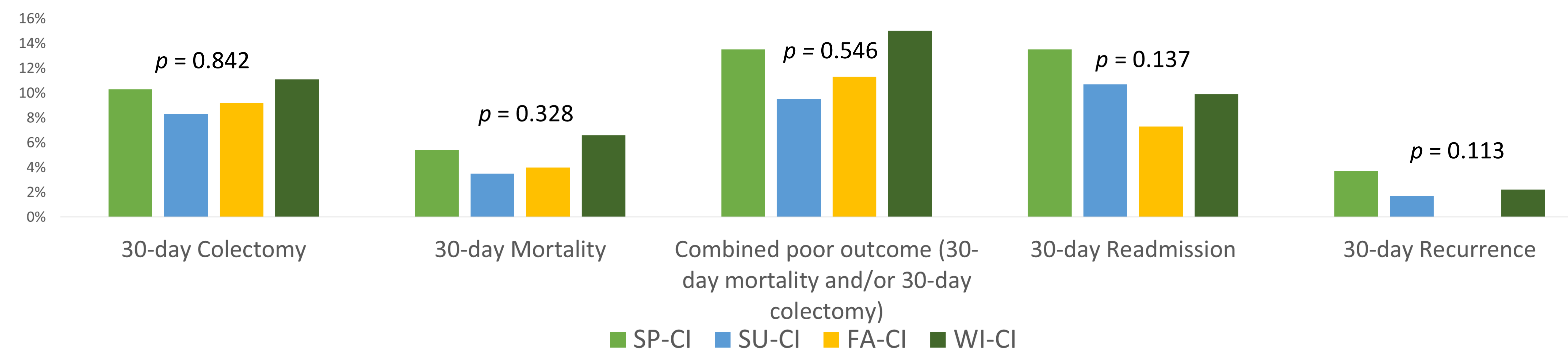
RESULTS

Table 1: Baseline characteristics of SP-CI, SU-CI, FA-CI and WI-CI.

Outcomes	Spring (SP-CI) 27.0% (185)	Summer (SU-CI) 24.5% (168)	Fall (FA-CI) 22.0% (151)	Winter (WI-CI) 26.4% (181)	p value
Demographics					
Age (years), median (IQR)	70 (63 - 80)	69 (61 - 79)	72 (64 - 80)	70 (60 - 80)	0.988
Female	135 (72.9%)	125 (74.4%)	114 (75.5%)	133 (73.4)	0.957
Medical comorbidities					
Colon cancer	2.1% (4)	1.1% (2)	1.3% (2)	2.2% (4)	0.837
Coronary artery disease	30.8% (57)	26.3% (44)	32.0% (48)	27.2% (49)	0.616
Diabetes mellitus	30.2% (56)	32.7% (55)	34.4% (52)	29.2% (53)	0.738
Stroke	8.1% (15)	8.3% (14)	11.9% (18)	13.8% (25)	0.226
Calculated Charlson Score, mean (SD)	5.0 (2.7)	5.0 (2.8)	5.2 (2.8)	5.1 (3.0)	0.979
Bowel Segment Involvement					
Small bowel involvement	6.8% (8)	7.2% (7)	4% (4)	7.3% (8)	0.732
Pan colitis	5.6% (10)	2.5% (4)	4.8% (7)	8.3% (15)	0.122
Any right colon involvement	24.8% (40)	27.3% (41)	21.8% (29)	28.6% (45)	0.564
Right colon only	13.5% (23)	16.6% (26)	10.6% (15)	14.7% (25)	0.500
CI Severity					
Mild CI	0.5% (1)	0.0% (0)	0.0% (0)	1.1% (2)	
Moderate CI	46.9% (86)	49.1% (82)	56.3% (84)	49.1% (88)	0.390
Severe CI	52.4% (96)	50.9% (85)	43.6% (65)	49.7% (89)	
ICU requirement	22.5% (41)	24.2% (39)	18.2% (27)	25.9% (46)	0.400

Graph 1: Outcomes of SP-CI, SU-CI, FA-CI and WI-CI.

- There were no differences with regards to age, gender or BMI.

- We observed no differences in the presentation, medical comorbidities, Charlson Comorbidity Index or treatment patterns among the four groups.

- 30-day colectomy was observed 10.3%, 8.2%, 9.2% and 11.1% in the CI-SP, CI-SU, CI-FA and CI-WI group, respectively (p=0.84).

- 30-day mortality or poor-outcome was not different among our cohorts.

- ICU requirements, segmental involvement, 30-day readmission and 30- day recurrence were not significantly different between the four groups.

CONCLUSION

Our study showed no difference in the distribution of biopsy-proven cases of CI based upon the season. This is in contrast to Asian-based studies. It is possible that the severity of the cases considered in our study are different than those in the Asian studies and that mild cases might have a seasonal variation that are less likely to have a pathological confirmation of the diagnosis.