Warm Climate Is Not Associated With Increased Wound Infection Rate In Patients Undergoing Minimally Invasive Surgery

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Introduction

- High temperatures have been linked to appendicitis & diverticulitis admissions.[1-2]
- Risk for surgical site infection (SSI) increases during warmer months for open operations.[3]
- However, it is not yet known if outcomes for minimally invasive surgeries (MIS) are adversely affected by warm temperatures

We sought to determine if surgical site infections for MIS operations demonstrated seasonal variation and hypothesized that SSI would be higher during warm months

Methods

Retrospective cohort study

Institutional NSQIP Data

Patients who underwent one of the following MIS procedures from 2006-2021

Inguinal Hernia	Ostomy formation
Ventral Hernia	Colon resection
Small bowel resection	Combined abdomino-perioneal procedure

Ambient Temperature Month of Surgery

Average ambient temperature during the month of surgery for patient's home county - from the NOAA

National Oceanic and Atmospheric Administration

1 - Li et al., 2022. Is higher ambient temperature associated with acute appendicitis hospitalizations? A case-crossover study in Tongling, China. **PMID: 35913519.**
2 - Adler et al., 2016. Seasonal Variation in Diverticulitis: Evidence From Both Hemispheres. **PMID: 27505116**
3 - Sahtoe et al., 2021. Warm Weather and Surgical Site Infections: A Meta-analysis. **PMID: 34422523**

Ambient temperature was NOT associated with wound complications

for patients undergoing procedure with minimally invasive approach

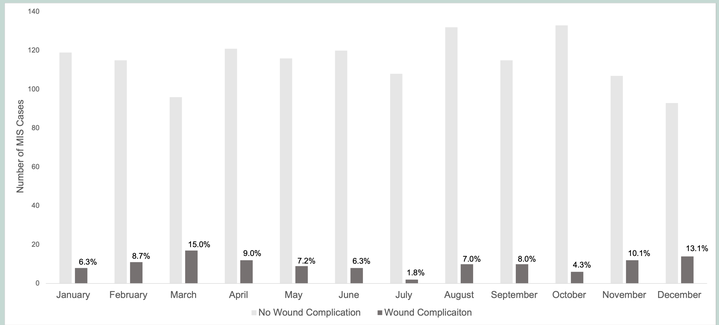
Scan to see more work done by the Chu Lab

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Results

- 1495 patients were linked to ambient temperature data.
- Majority of patients were female (53%), white (71%) with private insurance (52%) though with high social vulnerability index (63%)
- Colon resection was most common operation (60%)
- Majority had ASA class 3 (73%), 15.3% had diabetes, 15.2% were on steroids, and 15.5% used tobacco within year of surgery.
- Wound complications per month are shown in figure.
- **On multivariable analysis, ambient temperature was not significantly associated with wound complications for the overall cohort or procedural subgroups.**

Wound Complication Rates in MIS Procedures Based on Month of Operation during Study Period



Conclusion

Unlike prior studies of open operations, MIS procedures did not show increased risk of SSI during warm months. This deserves additional studies to further evaluate if an MIS approach may be less vulnerable to SSI during warmer months.

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