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Introduction

- Increasing antibiotic resistance has made the routine use of prophylactic perioperative antibiotics (PPA) questionable in cases with a low rate of surgical site infection (SSI)[1,2]
- Elective laparoscopic cholecystectomy (ELC) is considered a clean-contaminated case (estimated risk of infection of 3-11%)[3]
- Goal: evaluate institutional use of PPA and subsequent SSI rates in ELC

Methods

- Retrospective review
  - Single-institution
  - Children <18 years old
  - Elective laparoscopic cholecystectomy (biliary dyskinesia, symptomatic cholelithiasis, hyperkinetic gallbladder, gallbladder polyp(s))
  - July 2010 - August 2020
- SSI defined as infection requiring antibiotics within 30 days of surgery

Results

- 502 patients underwent ELC during the study period
  - Majority (78%) female and Caucasian (80%) (Table 1)
  - 60% (n=301) received PPA, 40% (n=201) did not
  - Overall SSI rate: 3% (no PPA = 5% vs. PPA = 1%)
- Children who received PPA were 77% less likely to develop SSI on multivariate logistic regression analysis (see Table 3)
- All superficial SSIs
- Only 1 child readmitted (IV antibiotics)
- NNT = 24

	Received PPA (n=301)	No PPA (n=201)	p-value
Female (%)	80.0	75.6	0.24
Age, years [IQR]	15.2 [13.4,16.6]	14.9 [13,16.3]	0.06
Ethnicity (%)			
Caucasian	79.4	80.6	
African American	6.6	4.0	
Hispanic	8.3	9.5	0.34
Asian	0	1.0	
Other	5.6	5.0	
BMI (kg/m²)	25 [20.6,32.1]	24.2 [20.3,29.7]	0.19
Pre-operative diagnosis (%)			
Symptomatic cholelithiasis	54.2	43.8	
Biliary dyskinesia	43.5	51.7	0.06
Hyperkinetic gallbladder	1.7	2.0	
Gallbladder polyp(s)	0.7	2.5	

Table 1. Demographics, baseline characteristics, and pre-operative diagnoses of children who underwent ELC.

	Received PPA (n=301)	No PPA (n=201)	p-value
Developed surgical site infection (%)	1.3	5.5	
Symptomatic cholelithiasis	0.3	2.0	
Biliary dyskinesia	1.0	3.5	***0.01***
Hyperkinetic gallbladder	0	0	
Gallbladder polyp(s)	0	0	

Table 2. SSI rate by diagnosis.

Outcome: SSI	Unadjusted OR (95% CI); p-value	Adjusted OR (95% CI); p-value
Perioperative antibiotic administration	***0.23 (0.07-0.74); 0.01***	***0.23 (0.07-0.76); 0.02***
Gender	1.11 (0.31-4.02); 0.87	1.05 (0.27-4.08); 0.94
Age	0.98 (0.83-1.17); 0.86	0.99 (0.83-1.21);0.99
Ethnicity (Caucasian as reference)		
African American	NA	NA
Hispanic	1.69 (0.36-7.87); 0.51	2.40 (0.45-12.67); 0.30
Asian	NA	NA
Other	2.84 (0.60-13.50); 0.19	4.01 (0.76-21.08); 0.10
Diagnosis (symptomatic cholelithiasis as reference)		
Biliary dyskinesia	2.19 (0.74-6.49); 0.16	2.39 (0.72-7.94); 0.16
Hyperkinetic gallbladder	NA	NA
Gallbladder polyp(s)	NA	NA

Table 3. Results from logistic regression analysis.

Conclusion

- PPA use decreases the rate of SSI in ELC however, all SSIs in our cohort were superficial in nature and only one child required hospitalization for further treatment.
- We advocate for limited PPA use to avoid antibiotic-related complications (resistance, C. difficile infection) and to decrease healthcare costs.

References

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