

Risk factors for prolonged hospitalization after laparoscopic appendectomy in adults and elderly.

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Introduction

Acute appendicitis is one of the most common causes of admission to surgery department from emergency department. According to many meta-analyses laparoscopic appendectomy is beneficial for both adults and elderly patients. However elderly patients are more prone to prolonged length of hospital stay. Prolonged hospitalization increases medical expenses, therefore we sought to identify factors leading to longer hospital stay separately for adults under 60 years old and elderly. Moreover using of modified 5-item Frailty Index (mFI) and Brief Geriatric Assessment (BGA) scales to asses the risk of prolonged hospitalization and postoperative complication was evaluated for elderly patients.

Material and methods

This was a retrospective study including patients admitted to Surgical Department with acute appendicitis who underwent laparoscopic appendectomy. Prolonged length of hospital stay was defined as more than 3 days. Demographic data, comorbidities and surgical details were analyzed and compared in both groups. For elderly patients mFI and BGA scores were calculated.

Results

302 patients under 60 years old were enrolled to Group 1 and 55 elderly patients aged more than 60 years old were enrolled to Group 2. Prolonged hospitalization occurred in 72 (23.84%) patients in Group 1 and 27 (49.09%) patients in Group 2 (p<0.001).

Table 1. Baseline characteristics of study groups			
Parameter	Group 1 (<60 years)	Group 2 (>60 years)	P value
Number of patients, n	302	55	-
Females, n (%)	132 (43.71)	34 (61.82)	0.013
Age, median (IQR) [years]	29,5 (23-40)	64 (62-69)	<0.001
Abdominal surgery, befor, n (%)	46 (15.23)	20 (36.36)	<0.001
ASA I, n (%)	226 (74.83)	7 (12.73)	<0.001
ASA II, n (%)	68 (22.51)	31 (56.36)	<0.001
ASA III, n (%)	8 (2.64)	17 (30.90)	<0.001
Hypertension, n (%)	27 (8.94)	22 (40.0)	<0.001
Diabetes, n (%)	5 (1.66)	6 (10.91)	0.002

Table 2. Perioperative parameters of study groups			
Parameter	Group 1 (<60 years)	Group 2 (>60 years)	P value
Leukocytosis, mean ± SD [x1000 per mm ³]	14.21	14.02	0.639
C-reactive protein, median (IQR) [mg/l]	40.10 (17.50-77.90)	90 (60.20-115.0)	<0.001
Numeric Pain Raiting Scale score, median (IQR)	6 (5-7)	6 (4.5-7)	0.775
Intraoperative adverse events, n (%)	11 (3.64)	3 (5.45)	0.796
Appendix perforation, n (%)	14 (4.64)	10 (18.18)	<0.001
Postoperative complication, n (%)	29 (9.60)	8 (14.55)	0.387
Prolonged hospital stay, n(%)	72 (23.84)	27 (49.09)	<0.001



Table 3. Multivariate analysis of risk factors for prolonged hospitalization (>3 days) for group 1 (<60 years)			
Parameter	OR	95% CI	P value
Every year of age	1.015	0.980-1.052	0.407
C-reactive protein > 100 mg/l	3.174	1.062-9.489	0.039
Intraoperative adverse event	5.301	1.089-25.794	0.039
Appendix perforation	20.117	2.149-188.319	0.009
Postoperative complication	2.527	0.678-9.427	0.167

Table 4. Univariate analysis of risk factors for prolonged hospitalization (>3 days) for group 2 (>60 years)			
Parameter	OR	95% CI	P value
Every year of age	1.034	0.958-1.116	0.392
C-reactive protein > 100 mg/l	3.611	0.642-20.320	0.145
Appendix perforation	1.045	0.266-4.116	0.949
Postoperative complication	3.714	0.678-20.342	0.130
Modyfied Frailty Index – high risk	2.160	0.184-25.317	0.540
Brief Geriatric Assesment – intermediate or low risk	1.045	0.266-4.116	0.950

Conclusions

Prolonged hospitalization after laparoscopic appendectomy occurs commonly in both studied groups, but almost twice as often in elderly patients. As far as for adult under 60 years old we revealed following risk factors: CRP >100 mg/l, intraoperative adverse event and appendix perforation. Our study failed to identify risk factors for elderly patients.