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Aims of Study:

Elderly patients are a vulnerable population at increased risk for treatment-related toxicity due to geriatric comorbidities. Almost 25% of the urological population is older than 75 years. Moreover, individual frailty might be not age-related.

Development of methods and interventions to reduce the morbidity from surgery are eagerly awaited. The ASA score is a worldwide adopted system for assessing the fitness of patients before surgery proposed by the American Society of Anesthesiologists (ASA). A frailty index predicting adverse outcome among selected patients undergoing urologic oncological major surgery was retrospectively validated by Lascano (1) and simplified by Chappidi (2) as a preoperative predictor of complications following radical cystectomy.

The aim of our prospective study was to test the modified frailty index (mFI) to identify those patients at greatest risk for complications among consecutive patients undergoing urological procedures for oncological and non-oncological diseases. Moreover mFI was compared to ASA score.

	Patients n° (%)
Number	247
Gender	
Female	44 (18%)
Male	203 (82%)
Age	
≤75	193 (79%)
>75	53 (21%)
Frailty Index	
0	61 (25%)
1	86 (35%)
2	60 (24%)
3	32 (13%)
4	5 (2%)
5	3 (1%)
ASA	
I	5 (2%)
II	77 (31%)
III	162 (66%)
IV	3 (1%)

Tab.1 Patients' distribution according to ASA score and mFI

mFrailty Index	ASA				Tot.
	I	II	III	IV	
0	5 (2%)	35 (14%)	21 (9%)	0	61 (25%)
1	0	28 (11%)	58 (23%)	0	86 (35%)
2	0	11 (4%)	47 (19%)	2 (1%)	60 (24%)
3	0	3 (1%)	28 (11%)	1 (0%)	32 (13%)
4-5	0	0	8 (3%)	0	8 (3%)
Tot.	5 (2%)	77 (31%)	162 (66%)	3 (1%)	247

Tab.2 Concordance between ASA score and mFI classes

ASA	1-2	3-4	P value
# Patients	82	165	
Age	57 (44-65)	71 (66-77)	<0,05
Surgical procedure (minutes)	45 (25-78,8)	35 (20-107,5)	0,4037
Serius Complication	Yes	2	14
	No	78	147
Any Complication	Yes	13	32
	No	67	148
Readmission	Yes	1	13
	No	80	147
Lenght of Hospital Stay (extra)	Days	2,5 (2 - 3,5)	3,5 (2,5 - 5)
			0,004
Complication at 30 days	Yes	4	12
	No	62	120
Complication at 90 days	Yes	5	5
	No	61	123

Tab. 3 Patients'outcome according to ASA score

Methods:

Consecutive patients undergoing urological procedures were prospectively entered. The surgical interventions were classified as follows: 1. Major open/laparoscopic; 2. Lower urinary tract endoscopy; 3. Upper urinary tract procedures; 4 Minor surgery. For all patients age, ASA score, BMI, serum albumin, smoking status and routine hematological exams were preoperatively recorded. mFI was calculated. Operative time, hospital length of stay and post-operative complications according to Clavien-Dindo classification were recorded.

Results:

247 consecutive patients, 203 men and 44 women underwent urological surgery. Age was over 75 years in 53 (21%) patients. Patients' characteristics and their distribution within ASA and mFI classes are given in tables 1 and 2. ASA 2 and 3 categories included 239 (97%) patients, more widely distributed among the 5 mFI groups. Out of the 165 (66.8%) patients classified as ASA 3-4, 37 (22.4%) only were allocated in 3-5 mFI classes while of the 82 patients with ASA 1-2 score, 79 (96.3%) were allocated in 0-2 mFI categories (Table 2). Patients'outcome according to ASA and mFI scores are given in Tables 3 and 4. No association was statistically significant both for ASA and mFI with "any complication", "serious complications" and "late complications" rates. mFI was associated (p<0.05) with age only, while ASA index with age (p<0.05), readmission rate (p=0.03) and length of hospital stay (p=0.004). The performances of ASA and mFI did not change when the different categories of surgical procedures were considered.

Conclusions:

A concordance between ASA score and mFI emerges only for low risk classes. Both mFI and ASA score were not associated with surgical complications when oncological and non oncological urologic surgery were considered. However, ASA score showed a better performance resulting associate with readmission rate and length of hospital stay

mFrailty Index	0	1	2	3	4/5	p value
# Patients	61	86	60	32	8	
Age	50 (35-61,5)	69,5 (63-75)	69 (64-77)	70 (66-76)	71 (70-79)	<0,05
Surgical procedure (minutes)	50 (31,3-85)	35 (20-115)	30 (15-75)	35 (25-100)	25 (16,3-48,8)	0,165
Serius omplication	Yes	2	8	3	3	0
	No	58	77	55	27	8
Any omplication	Yes	14	12	12	5	2
	No	46	72	46	25	6
eadmission	Yes	3	4	2	3	2
	No	57	82	55	27	6
Lenght of ospital Stay (extra)	Days	3 (2,5-4,5)	3,5 (2,5-4,5)	3,5 (2,5-4,5)	3 (2,5-4,5)	3,5 (3,5-4,6)
						0,82
omplication at 30 days	Yes	4	5	2	3	2
	No	45	62	44	26	5
omplication at 90 days	Yes	5	3	2	0	0
	No	42	64	43	29	6

Tab. 4 Patients'outcome according to modified Frailty Index