



A multicentre analysis of the role of the G8 Screening Tool in the assessment of peri-operative and functional outcome in elderly patients with kidney tumours



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Introduction and Objectives

Increasing life expectancy in the general population and the fact that a disproportional burden of cancer occurs in people age ≥ 65 years old have generated great interest in delivering better cancer care for older adults. EORTC and NCCN recommend that all patients with cancer age ≥ 70 years old should undergo some form of geriatric assessment (GA). GA has important prognostic value for overall survival (OS), predicts adverse events of surgery or chemotherapy and detects unknown problems in more than 50% of patients with cancer.

G8 Screening Tool is a robust geriatric tool to identify a geriatric risk profile and for prediction of functional decline and prognostic information for overall survival (OS). (Figure 1)

In this scenario surgery is recommended to achieve cure in localised renal cell carcinoma (RCC). Radical Nephrectomy (RN) and Partial Nephrectomy (PN) whenever feasible represents gold standard treatment, but have a high rate of complications in close relation to the type of patient and the risk factors.

We evaluated the role of G8 Screening Tool in the assessment of outcome of elderly patients (≥ 70 y.o.) underwent surgery for kidney tumours.

Methods

We prospectively enrolled 162 patients from January 2012 to January 2016 underwent surgery at two urological institution. We included patients ≥ 70 y.o at surgery date. BMI, ECOG PS, Charlson Comorbidity Index (CCI) and CKD III at the time of surgery were performed to evaluated functional and pathological pre-operative status of each patient. Clavien-Dindo complications scoring system was used to report postoperative complications. (Table 1)

G8 Screening Tool was applied to each patient before surgery. We divided population into two groups (frail group vs. not-frail group) in relation to the geriatric risk profile based on G8 score (≤ 14 vs. > 14 respectively).

The aim was to identify the role of G8 Score in predicting intraoperative, postoperative complications and functional outcomes.

Results

A total of 70 females (34%) and 92 (46%) males were included in the analysis. 69 patients (42,6%) underwent PN, while 93 patients (57,4%) underwent RN. Mean age at surgery was 76.57 (SD \pm 6,37).

Comorbidity factors were included: mean CCI was 3.06 (SD \pm 1,99) with CCI > 5 points in 18 patients (15,65%), mean BMI was 25,15 (SD \pm 2,87), 55 patients (34%) with DM, 98 patients (60%) with HTN. CKD stage III was present in 73 patients (45,1%) underwent surgery. Mean ECOG PS was 1,53 (SD \pm 0,66) with score ≥ 3 in 7 patients (6,1%). Mean ASA Score was 2,84 (SD \pm 0,73). (Table 2,3,4)

According to the G8 Score, 91 patients (60%) were included in the frail group and 71 (40%) in the not-frail group. (Table 5)

41 patients of frail group vs. 2 patients of not-frail group developed intraoperative complications (p<0,0001). 51 patients of frail group vs. 4 patients of not-frail group developed postoperative complications (p<0,0001). (Table 6)

After a mean follow-up of 40,56 months, mean eGFR was 43,72 ml/min/1.73m² (SD \pm 21,49) in frailty group vs. 47,53 ml/min/1.73m² (SD \pm 13,36) in not-frail group (p=0,015). (Table 6)

Conclusion

G8 Screening Tool seems to be an effective and useful instrument to predict the risk of complications and functional outcomes in elderly patients candidate for kidney surgery.

However, further investigations should be necessary to confirm the good potential of this tool for identifying frail patients with a geriatric risk profile.

Figure 1. G8 Screening Tool

Item	Score
1. Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing, or swallowing difficulties?	0 = severe reduction in food intake 1 = moderate reduction in food intake 2 = normal food intake
2. Weight loss during the last 3 months	0 = weight loss > 3 kg 1 = does not know 2 = weight loss between 1 and 3 kg 3 = no weight loss
3. Mobility	0 = bed or chair bound 1 = able to get out of bed/chair but does not go out 2 = goes out
4. Neuropsychological problems	0 = severe dementia or depression 1 = mild dementia or depression 2 = no psychological problems
5. BMI (weight in kg/height in m ²)	0 = BMI < 19 1 = $19 \leq$ BMI < 21 2 = $21 \leq$ BMI < 23 3 = BMI ≥ 23
6. Takes more than 3 medications per day	0 = yes 1 = no
7. In comparison with other people of the same age, how does the patient consider his/her health status?	0.0 = not as good 0.5 = does not know 1.0 = as good 2.0 = better
8. Age	0 = > 85 years 1 = 80-85 years 2 = < 80 years
Abbreviation: BMI, body mass index.	

Table 1. Gender, age and comorbidity of population	
Characteristics	N.
N° of patients	162
Gender (%)	
Male	92 (56,8)
Female	70 (43,2)
Age	
Mean (range)	76,57 (70-91)
BMI	
Mean (range)	24,92 (18,9-31,5)
ECOG	
Mean (range)	1,54 (0-3)
≥ 3 (%)	9 (5,55)
Charlson Comorbidity Index	
Mean (range)	3,05 (0-9)
≥ 5 (%)	33 (20,37)
DM (%)	
Yes	55 (33,95)
HTN (%)	
Yes	98 (60,49)
Pre-Op creatinine level (mg/dL)	
Mean (range)	1,17 (0,69 – 2,49)
CKD stage III (%)	
Yes	73 (45,06)
ASA Score	
Mean (range)	2,84 (1-4)
≥ 3 (%)	116 (71,60)
G8 Screening Tool (%)	
≤ 14	91 (56,17)
> 14	72 (43,83)

Table 2. Clinical and pathological characteristics of population	
Characteristics	N.
Clinical Size	
Mean mm (range)	52,30 (11-173)
Side (%)	
Left	77 (47,5)
Right	83 (51,2)
Bilateral	2 (1,3)
Solitary Kidney (%)	
Yes	4 (2,5)
RENAL Score	
Mean (SD)	7,76 (2,41)
pTNM (%)	
pT1a	52 (32,1)
pT1b	49 (30,2)
pT2a	12 (7,4)
pT2b	29 (17,9)
pT3a	3 (1,85)
pT3b	3 (1,85)
Histotype malignant (%)	
Benign	14 (8,7)
Fuhrman Grading (%)	
G1	26 (16,05)
G2	63 (38,9)
G3	37 (22,85)
G4	22 (13,5)

Table 3. Intra and post-operative surgical characteristics of population	
Characteristics	N.
Type of surgery	
PN (%)	68 (41,9)
RN (%)	94 (58,1)
Type of surgery	
Open (%)	115 (71)
Laparoscopic (%)	14 (8,6)
Robotic (%)	33 (20,4)
Operative Time	
Median min (range)	173,21 (48,25)
Ischemia in PN (%)	
Warm	44 (27,1)
Cold	24 (14,9)
No ischemia	94 (58)
Ischemia Time in PN	
Mean (SD)	18,23 (6,6)
Blood Loss	
Mean ml (SD)	338,02 (174,08)
Intraoperative transfusion (%)	
Yes	5 (3,1)
Intraoperative complications (%)	
Yes	43 (26,5)
Postoperative complications (%)	
Yes	55 (34)
Clavien-Dindo grade (%)	
I	10 (6,2)
II	35 (21,6)
\geq III	11 (6,7)
Readmission within 30 days (%)	
Yes	4 (2,5)
Length of stay	
Mean (SD)	10,02 (7,57)

Table 4. Post-operative follow-up of population	
Characteristics	N.
Follow-up (months)	
Median (SD)	40,96 (5,48)
Status of pts at median follow-up	
Alive (%)	88 (54,3)
Death (%)	74 (45,7)
Recurrence	
Yes (%)	40 (24,7)
Time to recurrence (months)	
Median (range)	20,36 (4-42)
Post-Op creatinine level (mg/dL)	
Mean (range)	1,52 (0,71 – 6,84)
eGFR post	
Mean mL/min/1.73 m ² (DS)	45,38 (19,23)
% Δ eGFR	
Mean (SD)	-18,77 (29,52)

Table 5. Clinical and pathological characteristics for frail and not-frail group			
Characteristics	G8 ≤ 14	G8 > 14	p-value
N. patients	91	71	
Age	75,78 (4,49)	77,17 (7,78)	p = 0,036
BMI	25,23 (2,72)	25,06 (3,03)	p = 0,892
ECOG			
Mean (DS)	1,60 (0,69)	1,45 (0,60)	p = 0,280
Charlson Comorbidity Index (%)			
Mean (DS)	3,31 (2,04)	2,71 (1,86)	p = 0,296
DM (%)			
No	53 (58,25)	54 (76,06)	
Yes	38 (41,75)	17 (23,94)	p = 0,018
HTN (%)			
No	35 (38,47)	29 (40,85)	
Yes	56 (61,53)	42 (59,15)	p = 0,758
CKD stage III (%)			
No	47 (51,75)	42 (59,16)	
Yes	44 (48,25)	29 (40,84)	p = 0,341
ASA Score (%)			
Mean (DS)	2,86 (0,723)	2,82 (0,739)	p = 0,885
≥ 3			
Diameter			
Mean mm (DS)	49,93 (24,04)	54,15 (30,34)	p = 0,570
RENAL score			
Mean (DS)	7,82 (2,46)	7,69 (2,35)	p = 0,834
Creatinine pre			
Mean mg/dL (DS)	1,35 (0,65)	1,17 (0,53)	p = 0,574
eGFR pre			
Mean mL/min/1.73 m ² (DS)	53,55 (17,73)	57,56 (18,04)	p = 0,886
Operative Time			
Mean min (DS)	167,76 (45,81)	180,18 (50,68)	p = 0,393
Blood loss			
Mean ml (DS)	360,87 (187,89)	308,63 (150,77)	p = 0,064
Clavien – Dindo (%)			
0	38 (47,82)	67 (93,48)	
1	8 (10,14)	2 (2,17)	
2	33 (33,33)	2 (4,35)	p < 0,001
≥ 3	11 (8,71)	0 (0)	
pTNM (%)			
pT1a	26 (32,1)	26 (36,7)	
pT1b	26 (32,1)	23 (34,3)	
pT2a	8 (9,9)	4 (5,9)	
pT2b	17 (21)	12 (17,2)	
pT3a	3 (3,7)	0 (0)	
pT3b	1 (1,2)	2 (2,9)	
Fuhrman grade (%)			
G1-G2	54 (66,7)	35 (52,2)	
G3-G4	27 (33,3)	32 (47,8)	p = 0,390
Length of stay			
Mean – days (DS)	11,52 (7,9)	11,8 (7,4)	p = 0,657
Readmission within 30 days			
Yes (%)	1 (1,1)	3 (4,25)	p = 0,206

Table 6. Analysis of complications and eGFR in two group of patients			
	G8 score ≤ 14	G8 score > 14	P-value
Intra-operative complications (%)			
Yes	41 (45,05)	2 (2,81)	p < 0,0001
No	49 (54,95)	68 (97,19)	
Post-operative complications (%)			
Yes	52 (56,04)	4 (5,63)	p < 0,0001
No	38 (43,96)	67 (94,37)	
Creatinine after follow-up			
Mean (DS)	1,76 (0,95)	1,39 (0,42)	p = 0,002
eGFR after follow-up			
Mean (DS)	43,72 (21,49)	47,53 (13,36)	p = 0,015

