Predicting chemotherapy toxicity in older adults with gastrointestinal cancer in Japanese

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Backgrounds

Recently, performance status is one of effective indicators for predicting chemotherapeutic toxicity of all patients with cancer regardless of age. Hurria constructed **a new prediction model** of grade 3 or more of the chemotherapy toxicity in 2011.

That model has called the **CARG toxicity tool**.

Objective

We examined the effect of **applying this CARG toxicity tool to Japanese patients** with **gastrointestinal cancer** treated with **initial chemotherapy**. In addition , we examined **whether the CARG toxicity tool was useful for predicting serious risks** from chemotherapy in elderly Japanese patients with gastrointestinal cancer.

Methods and Patients

In patients with gastrointestinal cancer patients in Hokkaido Cancer Center(N=258).

- ≧65 years of age
- 1st line chemotherapy
- side effects evaluable patients

Target Patients (N=112)

- Patient outcomes was evaluated **using CARG toxicity tool.**
- Samples were divided into **three risk groups** (H, M, L) by risk factor score.
- Compare the frequency of **grade 3 or higher toxicity** in each group.

Results

Table 1. Patients Characterisis (N=112)

Characteristic : No of patients 【%】			
Age,Years		Cancer Type	
65-69	29【26%】	stomach	24【21%】
70-74	25【22%】	Pancreatic	35【31%】
75-79	29【26%】	Esophageal	10【 9%】
80-84	26【23%】	Colon(Rectal)	22【20%】
85-	3【3%】	Biliary tract	21【19%】
Sex			
Female	57【42%】		
Male	65【58%】		

Table 2. Treatment-Related Adverse Events

Toxicity Type:Grade 3-5 of Toxicity No of Patients 【%】			
Hematologic	47【%】	Non-Hematologic	12【%】
ANC	23【%】	Fatigue	4【%】
WBC	27【%】	Nausea	4【%】
Hemglobin	19【%】	Diarrhea	1【%】
Platelets	3【%】	Infection with normal ANC	2【%】
Infection with abnormal ANC	1【%】	Other	5【%】

Our study date (GI cancer N=112)

CARG Toxicity Tool Risk factor	score	Odds
① Age ≧72years	2	1.85
② Cancer Type GI or GU	2	2.13
③ Chemotterapy dosing,standard dose	2	2.13
④ No of chemotherapy drugs,polychemotherpy	2	1.69
⑤ Hemoglobin<11g/dL（male),<10g/dL（female）	3	2.31
⑥ Creatinine Clearance	3	2.46
⑦ Hearing,fair or worse	2	1.67
⑧ No.of falls in last 6 months,1 or more	3	2.47
⑨ Walking 1 block,sonewhat limited/limited a lot	1	1.50
⑩ Taking medications,with some help/unable	2	1.71
⑪ Decreased social activity because of physical/ emotional health,limited at least sometimes	1	1.36

Table3.Predictive Model(Multivariate analysis of risk factors)

Cancer type → GI					Cancer type → Pancreatic cancer				
Factor	odds	95% CI	P value	Score	Factor	odds	95% CI	P value	Score
①	4.44	1.29 to 15.23	0.018	2	①	2.85	0.97 to 8.41	0.058	2
②	0.09	0.025 to 0.31	p < 0.001	2	②	8.05	1.89 to 34.23	0.005	2
③	2.64	0.83 to 8.44	0.101	2	③	1.77	0.62 to 5.05	0.286	2
④	5.46	1.15 to 25.86	0.033	2	④	5.31	1.02 to 27.79	0.048	2
⑤	4.93	1.44 to 16.93	0.011	3	⑤	3.30	1.04 to 10.44	0.042	3
⑥	1.10	0.29 to 4.17	0.883	3	⑥	0.99	0.28 to 3.57	0.992	3
⑦	0.27	0.040 to 2.10	0.211	2	⑦	0.26	0.04 to 1.89	0.184	2
⑧	1.92	0.13 to 28.02	0.634	3	⑧	2.08	0.17 to 25.96	0.570	3
⑨	1.32	0.35 to 4.95	0.677	1	⑨	1.46	0.41 to 5.22	0.560	1
⑩	2.69	0.50 to 14.55	0.250	2	⑩	1.68	0.34 to 8.32	0.523	2
⑪	3.79	1.22 to 11.74	0.021	1	⑪	4.11	1.34 to 12.62	0.014	1

In Japanese gastrointestinal cancer patients, the odds ratio was calculated with reference to the CARG tool. The disease factor of the CARG toxicity tool was changed from GI to pancreatic cancer.

Our date GI odds = 0.09【0.03-0.31 】?? ⟺ **Hurria date** GI odds = 2.13【1.39-3.24 】

↘ **panc. odds = 8.1【1.9-34.2 】**

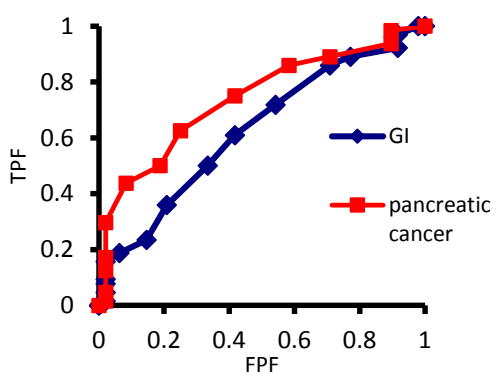

Fig 1. The curve show AUC of GI or pancretic by ROC analysis. The AUC for GI is 0.63 [0.52–0.73] (P = 0.0165), and the AUC for pancreatic cancer was 0.74 [0.64–0.83] (P <0.001) as assessed via ROC analysis.

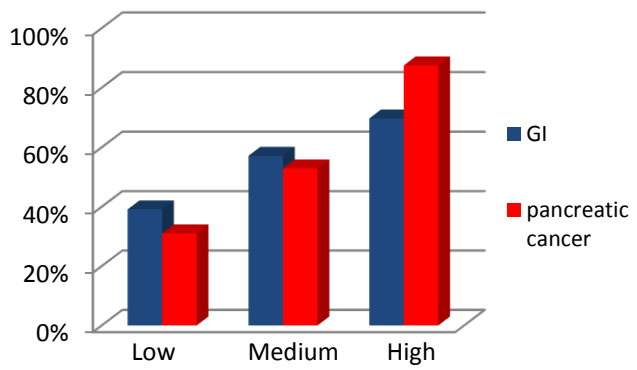

Fig 2. Ability of risk score to predict chemotherapy toxicity. Graphs show grade 3 or more toxicity. Low: 0-5 ,Medium:6-9,High: > 10

Discussion

The reason for the difference Hurria's study and our study.

(a)The **operation** of gastric cancer or in **adjuvant treatment**.

(b) Pioneering -study only included **5% Asians**.

Conclusion

The modified CARG toxicity tool can be used to more clearly distinguish the risk of initial chemotherapy toxicity of elderly Japanese patients with gastrointestinal cancer.

These data will provide the basis for future intervention studies in elderly.