

FDG PET/CT as a preoperative staging modality for Early Gastric Cancer

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Objectives:

The purpose of this study was to evaluate the usefulness of FDG PET/CT as a preoperative nodal staging modality for early gastric cancer.

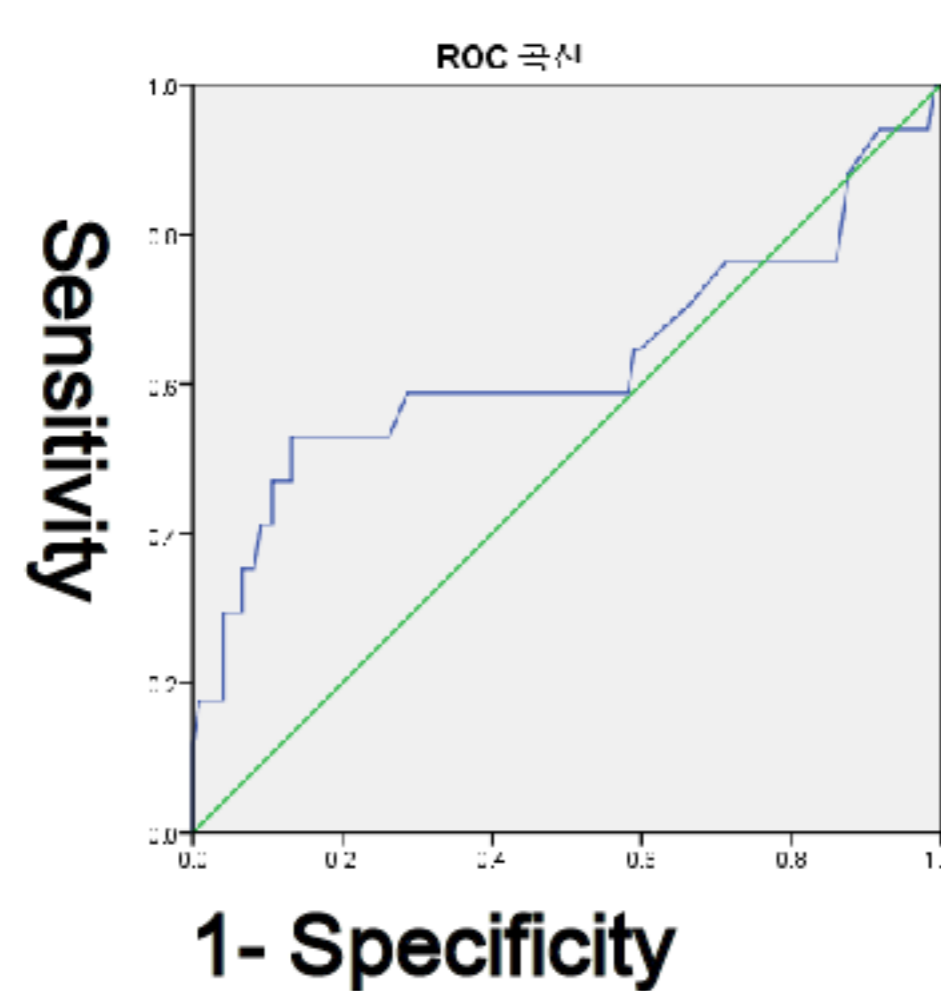
Methods:

Between January 2006 and December 2014, 230 patients who were diagnosed with early gastric cancer (T1 stage) after a curative gastrectomy were evaluated retrospectively. FDG uptake values were represented by maximal standardized uptake value (SUVmax). The clinicopathologic factors and SUVmax of PET/CT were assessed as predictors for lymph node metastasis.

2 radiologists (before reporting PET scan, they knew the location of gastric cancer from a report of EGD)

mSUV : primary tumor site, not regional lymph node

Results:



AUC: **0.631**
95% C.I. : 0.452 ~ 0.809

Cut-off : **5.75**
Sensitivity : 52.9%
Specificity : 86.9%

Basic features

- T1a vs T1b : 137 vs. 93
- N0 vs N1~3 : 208 vs. 22
- Male vs Female : 153 vs. 77
- Mean age : 62.8 ± 12.3 (24 ~ 87)

	SUVexpression		total No.	P value	
	NO uptake	Up take			
Age	60.7 ± 12.7	64.3 ± 11.9	230	0.030	
Tumor size	1.6 ± 0.9	2.6 ± 1.9	230	<0.001	
Depth	Mucosa	65	72	137	0.004
	Submucosa	26	67		
Gender	M	60	93	153	0.887
	F	31	46		
Histology	Differ	43	73	116	0.500
	Undiffer	48	66		
Laurentype	Intestinal	54	87	141	0.214
	Diffuse	33	39		
	Mixed	4	13		
Nodal metastasis	No	86	122	208	0.110
	Yes	5	17		
Lymphovascular invasion	No	85	120	205	0.128
	Yes	6	19		

The overall rate of lymph node metastasis was 9.6 % (22/230). In 39.6% patients (91/230), primary tumors were not revealed on PET/CT scan. Mean SUVmax was 4.6 ± 1.7 in the hypermetabolic tumor group (168/230). In 168 patients, the cutoff value of nodal metastasis was 5.75 (sensitivity=52.9%, specificity=86.9%). >5.75 SUVmax (OR=3.9), >2cm (OR=3.9) and expression of lymphovascular invasion (OR=8.5) were found as a risk factor for nodal metastasis in 230 patients (p<0.05). In hypermetabolic patients (168/230) on PET/CT scan, >5.75 SUVmax (OR=5.6), >2cm (OR=7.1) and expression of lymphovascular invasion (OR=8.9) were found as a risk factor for nodal metastasis (p<0.05).

Conclusions:

>= 2 cm (tumor size), >=5.75 SUVmax and the presence of lymphovascular invasion were the risk factors for a nodal metastasis at EGC.

The over-expression of mSUV (>= 5.75) seems to be a good indicator for nodal metastasis at EGC. (sensitivity=52.9%, specificity=86.9%)

References:

Gastric Cancer (2011) 14:113–123
Br J Surg. 2001 Mar;88(3):444-9
World J Gastroenterol. 2014 Oct 14; 20(38): 13775–13782

