

Stage Migration of Gastric Cancer According to the Extent of Lymph Node Dissection

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Purpose: In this study, the authors attempted to evaluate the stage migration phenomenon according to D1 lymphadenectomy and D2 lymphadenectomy in the same patients.

Methods: A retrospective study was performed in 300 consecutive patients with gastric cancer who had undergone curative resection with nodal yields of D2 or more from 1994 to 1997. The lymph node status was evaluated in two different extents. Group B included patients with whole harvested regional lymph nodes (D2<) while group A include patients with perigastric lymph nodes (D1). Each group was staged by the number of involved lymph nodes according to the UICC-TNM stage (5th), and by the ratio of involved to resected lymph nodes. Stage migration and the difference of 5YSR were observed between the two groups.

Results: In staging by the number of involved lymph nodes, 25 cases (8.3%) of group B were staged up. According to the status by the ratio of involved lymph nodes, 14 cases (4.6%) of group B were staged up and 28 (9.3%) were staged down.

Conclusion: In the staging of gastric cancer, adequate lymph node dissection was essential for accurate lymph node staging. In the cases of limited lymph node dissection, some extent of stage migration was considered assessing in the prognosis. (J Korean Surg Soc 2002;63:390-396)

Key Words: Stage migration, Gastric cancer, Lymph node dissection

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가 가 (1-3)
 가 가
 가 가 가
 가 가
 D1
 (4,5)
 D2
 (6-8)
 가
 가
 1994 1 1997 12
 453
 32 , 33 ,
 가 15 (D1+N7)
 50 , 6 , 32
 300
 () ,
 92.6%
 54.3 . 94 97
 Adachi (9)

Level I
perigastric lymph nodes 1. right cardiac, 2. left cardiac, 3. lesser curvature, 4. greater curvature, 5. suprapyloric, 6. infrapyloric, Level II intermediate lymph nodes 7. left gastric artery, 8. common hepatic artery, 9. celiac artery, Level III distant lymph nodes 10. splenic hilum, 11. splenic artery, 12. hepatoduodenal ligament, 13. retropancreatic, 14. mesenteric root, 15. middle colic artery, 16. para-aortic nodes

Table 1. Methods of lymph node status classification

Lymph node status	N0	N1	N2	N3	N4
Level *	0	perigastric	intermediate	distant	
Number (UICC 5th)	0	1 6	7 15	> 15	
Ratio*	0	0.1	0.3	0.5	> 0.5

Ratio* = the ratio of involved lymph node to resected lymph node.

Table 2. Patients characteristics

Gender	
Male	222 (74.0%)
Female	78 (26.0%)
Age	
Mean	57.2 ± 10.5
Range	23 79
Tumor location	
Upper third	19 (13.0%)
Middle third	74 (24.7%)
Lower third	168 (56.0%)
Entire	39 (13.0%)
Histologic type	
Well differentiated	11 (3.7%)
Moderately differentiated	129 (43.0%)
Poorly differentiated	116 (38.7%)
Mucinous	2 (0.7%)
Signet ring cell	38 (12.7%)
Others	3 (1.0%)
Depth of invasion	
pT1	106 (35.3%)
pT2	51 (17.0%)
pT3	88 (29.3%)
pT4	55 (18.3%)
Type of resection	
Subtotal	235 (78.3%)
Total	65 (21.7%)

Level I N1, Level II N2, Level III N3
Level II
H &
E
B
Level I A
UICC-TNM (5th edition)

0, 1 6, 7 15, 16
N0, N1, N2, N3
0. 0.1, 0.3, 0.5, 1.0
N0, N1, N2, N3, N4 (Table 1).

A B

Kaplan-Meier
log-rank test 95%
(10)

1) (Table 2)
57.1 (23 79) , 60 가
118 (39.3%) 가 , 가 222
(74.0%), 가 78 (26.0%) 2.84 : 1
1/3 가 56.0%

Table 3. Characteristics of lymph nodes in group A and B

	Group A*	Group B [†]
N _{RES} [‡]	8065 (M=26.88)	11843 (M=39.45)
N _{INV} [§]	1165 (M=3.86)	1448 (M=4.83)
N _{D1} < [¶] (-)	146	138
N _{D1} < (+)	154	8
N _{D1} < (-)		82
N _{D1} < (+)		72

Group A* = the group of perigastric lymph node dissection (D1), Group B[†] = the group of whole harvested regional lymph node (D2 <), N_{RES}[‡] = the number of dissected lymph nodes, N_{INV}[§] = the number of involved lymph nodes, N_{D1} = the number of lymph nodes of D1 lymph node dissection, N_{D1} < [¶] = the number of lymph nodes over N_{D1}.

가
 가 35.3% 가
 가 29.3%
 (moderate differentiated)
 129 (43.0%) 가 116
 (38.7%), 11 (3.7%)
 D2
 65 (21.7%), 가
 234 (78.3%)
 2) A B (Table 3)
 D2
 11843 39.4±13.7 (
 : 15 98, : 37) A
 8065 68.1% 26.9±10.1 (
 6 60, : 24.5)
 A 1165
 3.88±6.4 B 1448
 4.82±7.9

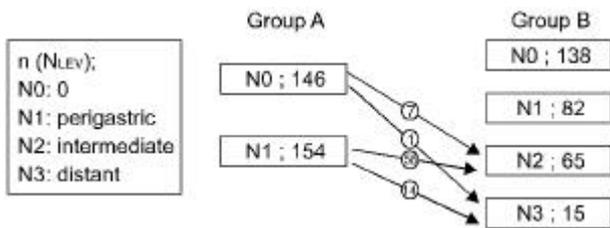


Fig. 1. stage migration in nodal stage. the nodal stage was based in the involved lymph node level.

3) A B
 (Fig. 1 3)
 80 (26.6%)
 (up stage migration)
 A
 25 (8.3%)
 B

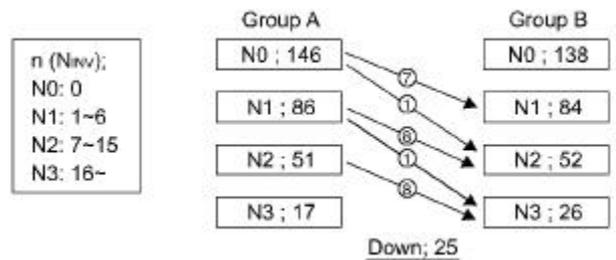


Fig. 2. stage migration in nodal stage. the nodal stage was based on UICC (5th).

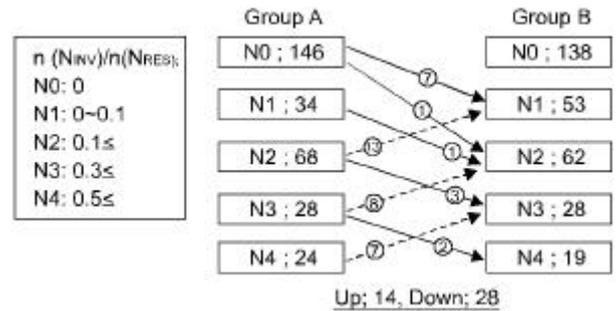


Fig. 3. stage migration in nodal stage. the nodal stage was based on the ratio of involved node to resected lymph nodes.

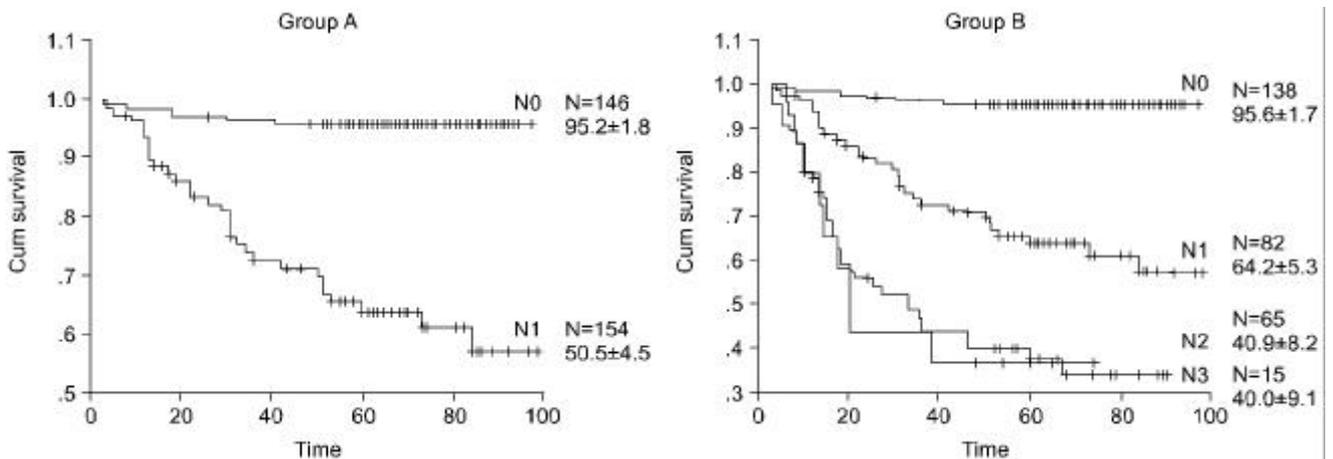


Fig. 4. Survivals of each lymph node stages in group A and B: staged by the level of involved nodes (P<0.0001).

가
UICC TNM 1165 24% 가가 ,
0.94 가 .
300
가 (15-18) Adachi (9) 가 80 (26.6%) , UICC TNM
300 25 (8.3%) ,
300 42
(14.0%) 가 .
가 가 UICC TNM
가
(19-23) 가 가
가
(19) 0%, 15%, 30%, > 31% 가
, Koderu (20) 0%, 20%, 60%, > 60% 42 28
가 가
(23) 0, 0.1, 0.3, 0.5, 가가
>0.5 A N0, N1, N2,
N3 5 95.2%, 64.0%, 32.6%, 15.5% B
5 0.1 95.6%, 70.9%, 35.7%, 10.4%
가 , 가
0.1, 0.3, 0.5, >0.5 . Bunt (24) ,
가 A N0, N1, N2, N3, N4 5 95.2%,
가 , 77.6%, 54.9%. 22.8%. 17.9% B 95.9%,
3.88 A ,
4.82 B 0.94 가 ,
가 가 가
(25) 가 가 D2 N2
, Hermanek (26) 가 가 D2 가 가
가 가 (6-8)
가 UICC 가
D2 ,
300 ,
D1 D2
가 . D2 D2
가 ,
B 1448 A ,
D1 D2

가	가	
	D2	D1
가	80 (26.6%)	25 (8.3%)
가	42 (14.0%)	28 (9.3%)
가	14 (4.6%)	

UICC TNM

D2

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