

전이성 뇌종양의 1년간 추적 관찰연구-불량한 예후와의 연관성

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= Abstract =

One Year Follow-up Evaluation of Metastatic Brain Tumors - with Relevant to the Poor Prognosis

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Objective : Prognostic factors of metastatic brain tumors have been widely reported and their operative indications also have been extended gradually even to the poor grade patients. Authors intended to analyze the causative factors for the clinical outcome of metastatic brain tumors, especially with relevant to the poor prognosis by one year follow - up evaluation.

Patients and Methods : The authors retrospectively studied the clinical characteristics of 46 cases(35 patients) with metastatic brain tumors among 466 cases(437 patients) which were operated on due to the brain tumor, during the period between January 1994 to June 1999. Statistical analysis was performed by using SPSS 8.0[®]. A *p*-value of less than 0.05 was considered clinically significant.

Result : Among the variable clinical factors in patients with metastatic brain tumors, Karnofsky Performance Scale (KPS) score of less than 70(16 patients), uncontrolled primary tumor(8 patients), and surgical resection without further adjuvant therapy(9 patients) showed statistically significant poor prognosis ; *p* value of 0.002, 0.032, and 0.001, respectively. Other tested variables, such as old age(greater than 65 years ; 10 patients), gender(male ; 20 patients), type of primary cancer(primary undefined ; 6 patients, lung cancer ; 15 patients), location(infratentorial ; 9 patients, sellar ; 5 patients), number of lesion(multiple ; 12 patients), and number of operation(multiple craniotomy ; 7 patients) were not related to the poor prognosis.

Conclusions : The most common primary site of distant metastasis was lung. The poorer prognosis was highly correlated with various factors including low KPS score(<70), no postoperative adjuvant therapy, and uncontrolled primary tumors.

KEY WORDS : Metastatic brain tumors · Poor prognosis · KPS score · Adjuvant therapy.

서 론

가 가

가 가

가

16)

가

7). Lagerwaard¹⁰⁾
 3.4, 1 48%
 , Galicich⁶⁾ 6, 1
 29%
 1

대상 및 방법

1. 대상

1994 1 1999 6 5
 466 (437)
 46 (35)
 9.9%(46/466)
 8%(35/437)

2. 방법

, , , ,
 , 1

3. 통계학적 분석

Windows SPSS 8.0
 (One way analysis of variance : ANOVA)
 Kruskal - Wallis test
 (Kaplan - Meier method)
 (survival curve)
 (median survival time) 가

결 과

1. 전이성 뇌종양의 연령 및 성별분포

20 : 15 (57.1% : 42.9%)
 55.6 ± 13.2 (28~86)

Table 1. Characteristics of 35 patients with metastatic brain tumors

| Characteristics | No. of patients(%) |
|--------------------------|----------------------|
| Gender | |
| Male : Female | 20 : 15(57.1 : 42.9) |
| Primary cancer | |
| Lung | 15(42.9) |
| Squamous cell | 5(14.2) |
| Small cell | 4(11.4) |
| Adenocarcinoma | 4(11.4) |
| Large cell | 1(2.8) |
| Bronchoalveolar cell | 1(2.8) |
| Other than lung | 14(40.0) |
| Nasopharynx | 3(8.5) |
| Kidney | 2(5.7) |
| Lymphoma | 2(5.7) |
| Breast | 1(2.8) |
| Stomach | 1(2.8) |
| Thyroid | 1(2.8) |
| Mediastinum | 1(2.8) |
| Melanoma | 1(2.8) |
| Hemangiopericytoma | 1(2.8) |
| Multiple myeloma | 1(2.8) |
| Unknown | 6(17.1) |
| Location | |
| Supratentorial | 23(65.7) |
| Hemisphere | 20(57.1) |
| Parietal | 9(25.7) |
| Frontal | 8(22.8) |
| Temporal | 3(8.5) |
| Lateral ventricle | 3(8.5) |
| Infratentorial | 7(20.0) |
| Parasellar and cavernous | 5(14.3) |
| No. of lesion | |
| Single | 23(65.7) |
| Multiple | 12(34.3) |

35 17 (49%) 55 65 , 65
 10 (29%) (Table 1). 65
 (p=0.608)(Table 3).

2. 전이성 뇌종양의 원발 병소의 분포

가 6 29 ,
 가 15 (52%) 가 ,
 5 , 4 ,
 4 , 1 .
 3 ,
 2 , 2 , , ,

Table 2. Clinical characteristics of 35 patients with metastatic brain tumors

| Characteristics | No. of patients (%) |
|---------------------|---------------------|
| Adjuvant Therapy* | |
| Yes | 26(74.3) |
| No | 9(25.7) |
| No. of operation | |
| 1 | 28(80.0) |
| 2 | 7(20.0) |
| KPS** score | |
| <70 | 16(45.7) |
| 70 | 19(54.3) |
| Control of 1° tumor | |
| Uncontrolled | 8(22.9) |
| Controlled | 27(77.1) |

* : Comprises both radiation alone and radiation and chemotherapy
 **KPS : Karnofsky Performance Scale

Table 3. Summary of analyses of prognostic variables(n=35)

| Variables | Univariate p-value | Tested for unfavorable outcome |
|----------------------|--------------------|--------------------------------|
| Age | 0.608 | 65 years |
| Gender | 0.790 | Male |
| Primary cancer | 0.245 | Primary unknown |
| | 0.881 | Lung cancer |
| Location | 0.134 | Infratentorial |
| | 0.224 | Sellar |
| Number of lesion | 0.080 | Multiple |
| KPS score | 0.002 | <70* |
| Primary uncontrolled | 0.032 | (+)* |
| No. of operation | 0.877 | Multiple craniotomy |
| Adjuvant Tx** | 0.001 | (-)* |

* : Statistically significant, p<0.05 by univariate analysis of variance, ** : Comprises radiation alone and both types of adjuvant therapies

1 (Table 1).

가 29 가 6 (p=0.245).

가 가 가

(p=0.881)(Table 3).

3. 전이성 뇌종양의 두개강내 분포

7 (9%)

23 (9%), 8, 3, 3, 5 (Table 1).

(15.6%) (25)

가 (p=0.134), (6%) (19.3%) (p=0.224)(Table 3).

4. 전이성 뇌종양의 병변의 수

23 (65.7%), 12 (34.3%)

, 4 가 (Table 1). 8, 2

2 .

(p=0.080)

(Table 3).

5. 임상증상

가 4

6. 전이성 뇌종양 환자의 술전 Karnofsky Performance Scale(KPS) 점수

KPS 19 70, 16 70 (Table 2), KPS 70 7 KPS

가 70 70

가 (p=0.002)(Table 3). , KPS 가 70

1

7. 전이성 뇌종양의 수술 당시 원발종양 조절여부

8, 가 (2%)

가 6, 2, 3

(Table 2).

(n=27)

(n=8)

(p=0.032)(Table 3).

8. 전이성 뇌종양의 수술횟수

35 28 (80%) 1

7 (20%) , 2
 2) (Table 2). 1
 2 (2), 1 (3)
 2

($p=0.877$)(Table 3).

9. 전이성 뇌종양의 술 후 보조요법(Adjuvant therapy)

Dexamethasone 20mg 1~
 2 . 26
 (180rad/day × 30days × 6)
 , 20 . 6 ()
 3 , 2 , 1)
 (ACNU+Procarbazine

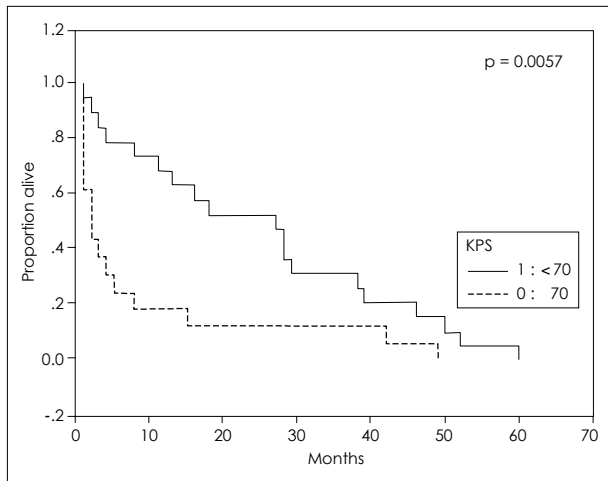


Fig. 1. Survival curve according to Karnofsky Performance Scale (KPS) Score.

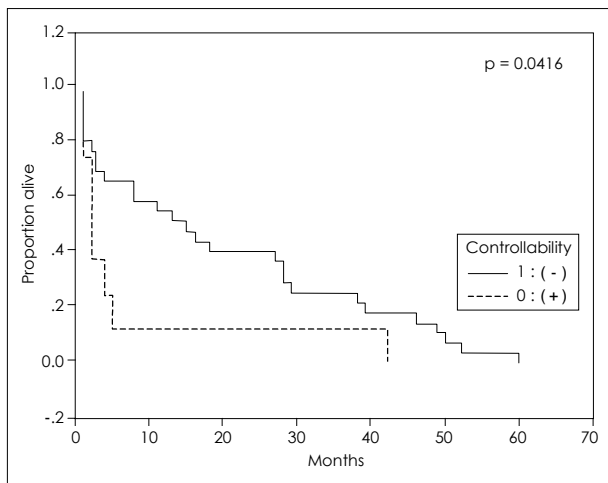


Fig. 2. Survival curve according to controllability of Primary tumors.

; × 6 cycle 4 , Taxol ; × 6
 2) (Table 2).

9
 가 7 가 2
 가
 (n=26) (n=9)

($p=0.001$). ,
 가

(Table 3).

10. 예후인자 분석 결과

가 70 ,
 KPS 가 70 ,
 가 (Table 3).

70 , KPS가
 가 (Fig.
 1).

11. 1년 내 사망의 원인 분석

1 19
 , 8 가
 가 6 ,
 가 4 , 1
 가 (n=6) 4 ,
 1 .

고 찰

가
 가 4~18%
 가 가
 가
 가 가 16).
 9.9%
 가 .

1 -

가 15 (52%) 가 29 가

가 1 6 Lagerwaard ¹⁰⁾ 1292 가

80%, 15% 5% ¹⁶⁾ 7 (25.0%), KPS 가 70 가

3 5

Noordijk ¹⁴⁾ 66

60 가 60

Black⁴⁾ 가 가 가

Posner Chernik¹⁵⁾ 50% 1 가 1 가 ⁶⁾

25% 가

Nakagawa ¹²⁾ 125 KPS 가 80 가 65 KPS 가 70 가 가

가 KPS 가 70 가 가

KPS 가 70 가 ¹³⁾ 1 가 가 ³⁾

65 가 Hayakawa ⁷⁾ 가 가 가

Kim ⁹⁾ 가 가 가

7).
 , KPS
 가 70 16 , 7 , KPS 가 70
 ,
 ,
 1~2 ,
 2~3
 ,
 3~6
 8
 8)
 ,

1)2)
 nitrosourea (methyl -
 CCNU or ACNU) 5-FU 가
 11)
 (brachytherapy)
 11)
 가
 1)
 가 가
 ,
 가 KPS가 70 ,
 ,

결 **론**
 가

6 1

- : 2001 1 8
- : 2001 7 19
- :
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References

- 1) Agboola O, Benoit B, Cross P, Da Silva V, Esche B, Lesiuk H, et al : *Prognostic factors derived from recursive partition analysis (RPA) of Radiation Therapy Oncology Group (RTOG) brain metastases trials applied to surgically resected and irradiated brain metastatic cases. Int J Radiat Oncol Biol Phys 42 : 155-159, 1998*
- 2) Auchter RM, Lamond JP, Alexander E, Buatti JM, Chappell R, Friedman WA, et al : *A multiinstitutional outcome and prognostic factor analysis of radiosurgery for resectable single brain metastasis. Int J Radiat Oncol Biol Phys 35 : 27-35, 1996*
- 3) Bindal RK, Sawaya R, Leavens ME, Hess KR, Taylor SH : *Reoperation for recurrent metastatic brain tumor. J Neurosurg 83 : 600-604, 1994*
- 4) Black P : *Brain metastasis : Current status and recommended guidelines for management. Neurosurgery 5 : 617-631, 1979*
- 5) Culine S, Bekradda M, Kramar A, Rey A, Escudier B, Droz JP : *Prognostic factors for survival in patients with brain metastases from renal cell carcinoma. Cancer 83 : 2548-2553, 1998*
- 6) Galicich JH, Sundaresan N, Arbit E, Passe S : *Surgical treatment of single brain metastasis : factors associated with survival. Cancer 45 : 381-386, 1980*
- 7) Hayakawa T, Yoshimine T, Arita N, Mogami H, Nakagawa H : *Metastases to the brain --prognosis and surgical indications. Gan To Kagaku Ryoho 17 (4 Pt 2) : 761-767, 1990 (Abstract)*
- 8) Ide Y, Oka K, Tsuchimochi H, Mizoguchi T, Fukushima T, Tomonaga M, et al : *Surgical results of brain metastasis from lung cancer : prognostic factors. Neurol Med Chir 31 : 18-23, 1991 (Abstract)*
- 9) Kim YS, Kondziolka D, Flickinger JC, Lunsford LD : *Stereotactic radiosurgery for patients with nonsmall cell lung carcinoma metastatic to the brain. Cancer 80 : 2075-2083, 1997*
- 10) Lagerwaard FJ, Levendag PC, Nowak PJ, Eijkenboom WM,

- Hanssens PE, Schmitz PI : *Identification of prognostic factors in patients with brain metastases : A review of 1292 patients. Int J Radiat Oncol Biol Phys 43 : 795-803, 1999*
- 11) Le Cesne A, Le Chevalier T, Caille P, Cvitkovic E, Contesso G, Spielmann M, et al : *Metastases from cancers of unknown primary site : Data from 302 autopsies. Presse Med 20 : 1369-1373, 1991*
 - 12) Nakagawa H, Miyawaki Y, Fujita T, Kubo S, Tokiyoshi K, Tsuruzono K, et al : *Surgical treatment of brain metastases of lung cancer : retrospective analysis of 89 cases. J Neurol Neurosurg Psychiatry 57 : 950-956, 1994*
 - 13) Nieder C, Nestle U, Motaref B, Walter K, Niewald M, Schnabel K : *Prognostic factor in brain metastases : should patients be selected for aggressive treatment according to recursive partitioning analysis (RPA) classes? Int J Radiat Oncol Biol Phys 46 : 297-302, 2000*
 - 14) Noordijk EM, Vecht CJ, Haaxma-Reiche H, Padberg GW, Voormolen JH, Hoekstra FH, et al : *The choice of treatment of single brain metastasis should be based on extracranial tumor activity and age. Int J Radiat Oncol Biol Phys 29 : 711-717, 1994*
 - 15) Posner JB, Chernik NL : *Intracranial metastases from systemic cancer. Adv Neurol 19 : 579-592, 1978*
 - 16) Yoon SY, Kang CG, Kim DH, Kim DJ : *A clinical analysis of metastatic brain tumor. J Kor Neurosurg Soc 18 : 680-686, 1989*