EPIDEMIOLOGICAL AND SURVIVAL DATA OF PATIENTS WITH LUNG CANCER ASSOCIATED WITH SYMPTOMATIC BRAIN METASTASIS

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Background and purpose

Brain metastasis are frequently associated with lung cancer. However, there are few epidemiological data on patients concerned.
The aim of this retrospective and descriptive epidemiological study was to compare diagnostical, therapeutical and survival data for symptomatic and asymptomatic patients treated in departement of pneumology of CHI Créteil.

Materials and methods

This study reviews 55 records of patients hospitalized in 2008, previously diagnosed with lung cancer and brain metastasis. The studied parameters were sex ratio, proportion of death, mean time from primitive cancer diagnosis to brain metastasis diagnosis, from cancer and brain metastasis diagnosis to death, lung cancer type, histological type, TNM (tumor node metastasis) stage, number and anatomic situation of brain metastasis, treatment and neurological symptoms. The statistical methods used were chi2 test or t-test (α=0.05). The survival curves were calculated with R logiciel according to Kaplan Meier method and log-rank test.

Results

Among 55 patients records reviewed:
- 48 died (87,3%),
- median survival time : - 8 months from lung cancer diagnosis,
                                        - 4 months from brain metastasis diagnosis,
- statistical difference between mean times from lung cancer and brain metastasis diagnosis to death (11 months *vs* 5.4 months, p<0.003),
- others results and survival data are shown in tables 1-3 and figure 1.

Table 1: Characteristics of symptomatic and asymptomatic patients

		Symptomatic patients (n=33=60%)			Asymptomatic patients (n=22=40%)			p value
		n	Mean (Med) ou %	95% CI	n	Mean (Med) ou %	95% CI	
Gender								
	female	10	30.3%		10	45.5%		0.2
	male	23	69.7%		12	54.5%		
Death		33	84.8%		22	90.9%		0.5
Age (years)								
	at death	28	66.1 (66)	61.0 – 71.2	20	62 (62.5)	56.9 – 67.0	0.2
	at cancer diagnosis	33	65.3 (65)	60.9 – 69.7	22	61 (62)	55.6 – 66.4	0.2
	at brain metastasis diagnosis	33	65.7 (65)	61.3 – 70.1	22	61.4 (62)	55.9 – 66.8	0.2
Time between diagnosis of (months)								
	cancer and metastasis	26	6.5 (4.5)	3.3 – 9.7	20	5.3 (3)	2.5 – 8.1	0.5
	cancer and death	28	10.4 (8)	6.7 – 14.0	20	12 (7.5)	7.5 – 16.5	0.5
	metastasis and death	28	4.8 (3.5)	2.8 – 6.8	20	6.3 (4)	3.4 – 9.2	0.4
Lung cancer type								
	NSCLC	25	75.8%		16	72.7%		0.3
	other	8	24.2%		6	27.3%		
Histological type of NSCLC								
	ADK	16	57.1%		10	62.5%		0.9
	other	12	42.9%		6	37.5%		
Cancer stage								
	metastatic (TxNxM1)	20	74.1%		12	66.7%		0.5
	other	7	25.9%		6	33.3%		
Brain metastasis								
Diagnosis situation	prevalent	7	21.2%		2	9.1%		0.3
	synchronous	8	24.2%		6	27.3%		
	incident	18	54.5%		14	63.6%		
Number	1	11	33.3%		9	40.9%		0.5
	2	7	21.2%		4	18.2%		
	>2	15	45.5%		9	40.9%		
Anatomic situation	supratentorial	21	63.6%		16	72.7%		0.5
	other	12	36.4%		6	37.5%		

ADK : adenocarcinoma / NSCLC: non small cell lung cancer/ TNM (tumor node metastasis / med : médiane / 95% CI : confidence interval at 95%

Table 2 : Frequency of brain metastaisis symptoms (n=33).

Clinical signs	n (%)
Motor deficiency	15 (45.5)
Confusion	6 (18.2)
Headache	6 (18.2)
Convulsions	5 (15.2)
Spatiotemporal disorientation	5 (12.1)
Balance disorders	4 (12.1)
Memory problems	4 (12.1)
Frontal syndrome	3 (9.1)
Neurosensory disorders	3 (9.1)
Cerebellar syndrome	2 (6.1)
Behavior disorders	2 (6.1)
Visual disturbances	2 (6.1)
Minigeal syndrome	1 (3.0)
Piriformis syndrome	1 (3.0)

Table 3: Others clinical patients characterics (n=55).

|	n (%)
Circumstance of brain metastasis disgnosis	
first clinical assesment	17 (30.9)
clinical signs	13 (23.6)
follow-up assesment	10 (18.2)
chemotherapy assesment	9 (16.4)
recurrence assesment	4 (7.3)
Treatment	
chemotherapy	47 (85.5)
brain radiotherapy	37 (67.3)
stereotaxic radiotherapy	4 (7.3)
neurosurgery	2 (3.6)
Non brain metastasis	29 (52.7)
Symptomatic treatement	
corticosteroids	35 (63.6)
antiepileptic drugs	14 (25.5)
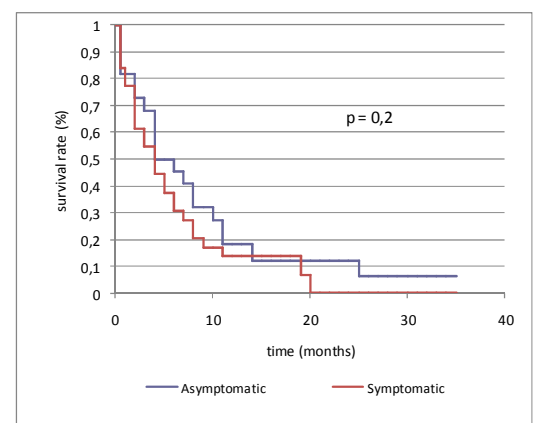
Figure 1 : Survival curves by neurological status (p value of long-rank test)

Conclusion

These results are consistent with a previous study on non small cell lung cancer and brain metastasis (J. Sanchez de Cos – 2009 [1]) which shows the same order of magnitude for patient characteristics and median survival time for symptomatic and asymptomatic patients (4 months *vs* 7.5 months). However, it would be interesting to consolidate this study by including more patients in order to improve the statistical relevance and identify new prognostic factors.

[1] : J. Sanchez de Cos, M-A. Sojo Gonzalez, M-V. Montero, M-C. Perez Calvo, M-J. Martin Vincente, M. Hernandez Valle – Non small cell lung cancer and silent brain metastasis survival and progostic factors –*Lung Cancer, 63 (2009), 140-145.*

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