A phase II trial of comprehensive treatment based on radiotherapy in leptomeningeal metastasis

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PURPOSE / OBJECTIVE(s)

To investigate the efficacy and security prospectively for patients with leptomeningeal metastases (LM) of comprehensive treatment based on radiotherapy.

Table 1

Patient characteristics			
Gender		**Pathological diagosis**	
Male	40(43.0%)	NSCLC	60(64.5%)
Female	53(57.0%)	SCLC	11(11.8%)
Age		BC	14(15.1%)
≥55	46(49.5%)	Others	8(8.6%)
< 55	47(50.5%)	**Brain metastases volume**	
KPS		< 10cc	38(40.9%)
≥80	63(67.7%)	≥10cc	51(54.8%)
		Immeasurable	4(4.3%)
< 80	30(32.3%)	**Primary lesion**	
GPA		Controlled	70(75.3%)
≥2	24(25.8%)	Progressed	23(24.7%)
< 2	69(74.2%)	**Extracranial metastases**	
RPA		Controlled/ Noun	59(63.4%)
Grade I	15(16.1%)	Progressed	34(36.6%)
Grade II	73(78.5%)	**BRT history**	
Grade III	5(5.4%)	WBRT	17(18.3%)
Mutation		SRS	17(18.3%)
Yes	63(67.7%)	WBRT+SRS	1(1.1%)
No	30(32.3%)	No	58(62.4%)

MATERIAL & METHODS

From 2014 to 2017, 93 patients diagnosed with LM admitted to our hospital who underwent whole brain radiotherapy (WBRT) or craniospinal irradiation (CSI) with or without simultaneously boost were enrolled. The dynamic changes of enhanced magnetic resonance imaging, clinical signs and symptoms, cerebrospinal fluid cytology and liquid biopsy detection were recorded. The primary endpoint was overall survival (OS), the secondary endpoints were local control (LC), intracranial progress-free survival (IPFS), brain metastasis specific survival (BMSS) and toxicity.

RESULTS

Figure 1

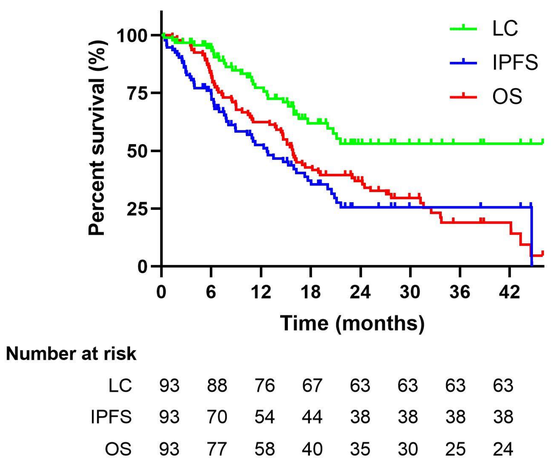

Table 2

Toxicities	Grade 1-2	≥Grade 3
Nausea/Vomiting	46 (49.5%)	0 (0%)
Myelosuppression		
Leukopenia	13 (14.0%)	5 (5.4%)
Neutropenia	8 (8.6%)	5 (5.4%)
Anemia	8 (8.6%)	0 (0%)
Thrombocytopenia	4 (4.3%)	6 (6.5%)
Hepatoxicity	5 (5.4%)	0 (0%)
Nephrotoxicity	2 (2.2%)	0 (0%)

The major primary diagnosis was non-small cell lung cancer. Subjects received WBRT with boost (40 Gy in 20 fractions (f) for WBRT and 60Gy in 20 f for boost), focal radiation to LM, WBRT and CSI (40 Gy in 20 f or 50Gy in 25 f for WBRT and 36 Gy in 20 f for CSI). 20 patients were found tumor cells and were administrated intrathecal chemotherapy. 63 patients used target therapy. The median follow-up time was 33.8 months. OS/LC/IPFS at 1 year were 62.4%/77.2% and 52.6%, respectively. The median survival time was 15.9 months, and the median brain metastasis-specific survival was 42.2 months. Treatment-related grade 3–4 adverse events were rare and included eight grade 3 hematological toxicity.

SUMMARY / CONCLUSION

Reasonable comprehensive treatment including precise radiotherapy, intrathecal chemotherapy and targeted agents were well tolerated and could extend the survival time of LM patients compared with historical controls.

REFERENCES / ACKNOWLEDGEMENTS

National Major Special Project of China (2016YFC0904600).
Beijing Hope Run Special Project of Cancer Foundation of China (LC2014A05).