Clinical Presentation and Imaging Characteristics of Leptomeningeal Carcinomatosis (LC) in Patients with EGFR Mutated Non-Small Cell Lung Cancer (NSCLC)

INTRODUCTION

- LC is a late and often fatal manifestation of NSCLC
- LC is more common in patients with EGFR mutated NSCLC (9%)
- Patients with EGFR+ NSCLC and LC may have unique imaging and clinical characteristic

METHODS

- 23 adult patients with EGFR-mutated NSCLC and LC treated at the University of Washington between 2016 and 2019 were identified and retrospectively reviewed
- Clinical characteristics and treatment modality were obtained from the EMR
- Radiographic subtype of LC and presence of ventriculomegaly were determined by independent review of brain and spine MRI imaging
- Overall survival (OS) was defined as the time from LC diagnosis to death from any cause
- Descriptive statistics were performed using Stata

RESULTS

- Mean age 57 years, 95% with advance NSCLC at diagnosis (Table 1)
- Cranial neuropathy was the most common presenting symptom for LC (Figure 3)
- Median time from NSCLC diagnosis to LC development was 23 months (95% CI:13-33)
- Median overall survival (OS) from time of LC diagnosis was 3.9 months (95% CI:2.7-10.0)
- 17% of patients presented with LC in the absence of parenchymal brain metastases
- 22% of patients had nodular or linear LC and 39% had a mixed presentation, 30% of patients had evidence of spinal LC (Figure 1, 2)
- Ventriculomegaly was present in 52% of patients and 48% developed clinical symptoms of hydrocephalus, 13% receiving shunt placement

CONCLUSIONS

- Patients with nodular LC and absence of ventriculomegaly had better OS
- OS remains poor in patients with LC associated with EGFR mutated NSCLC, although appears better in patients with nodular LC.
- The high incidence of hydrocephalus emphasizes the need for its early recognition and treatment.
- Further studies are needed to identify promising treatment strategies

Figure 1. LC Imaging Presentation Types

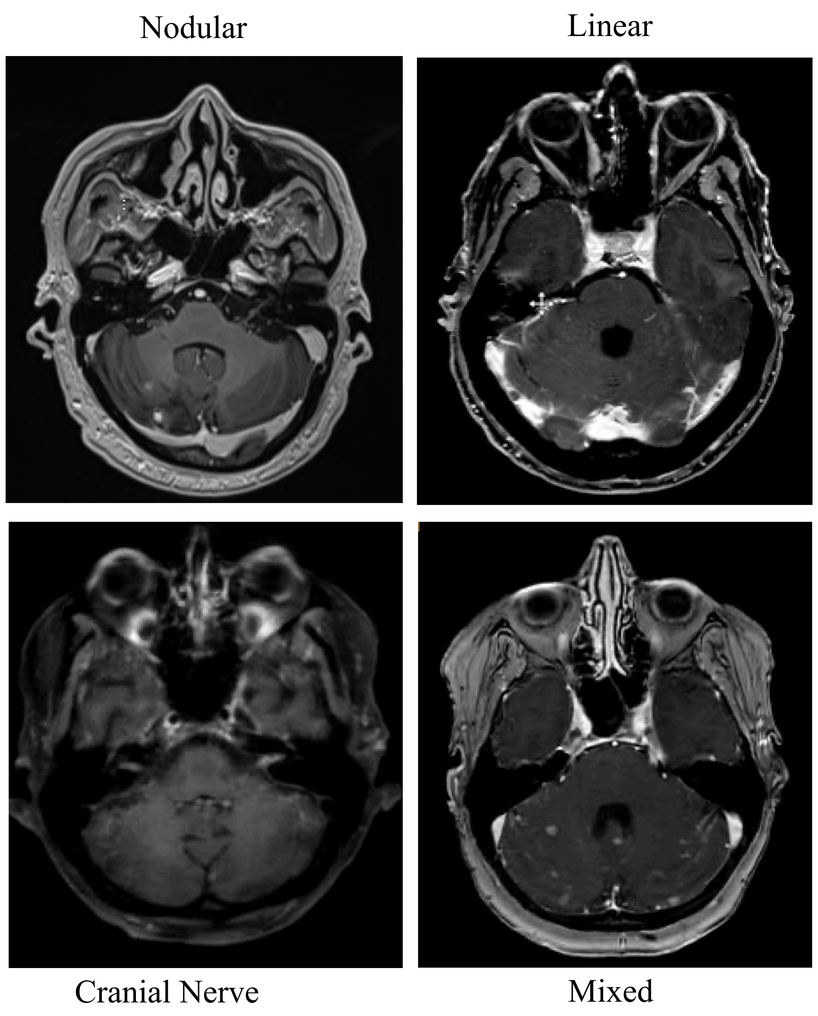


Figure 2. Frequency of Different Imaging Presentation of LC

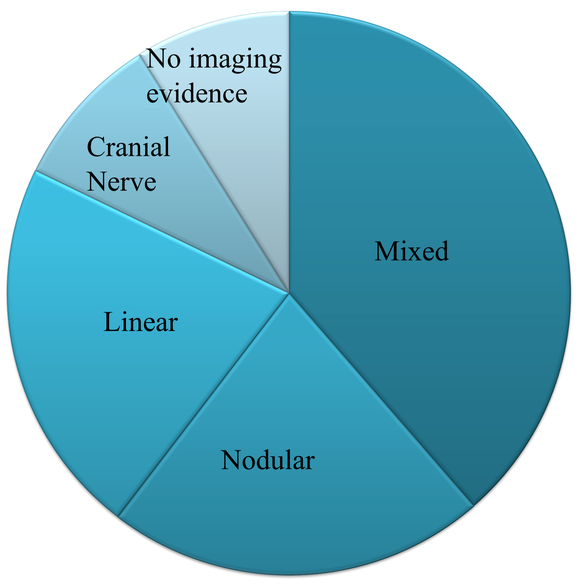


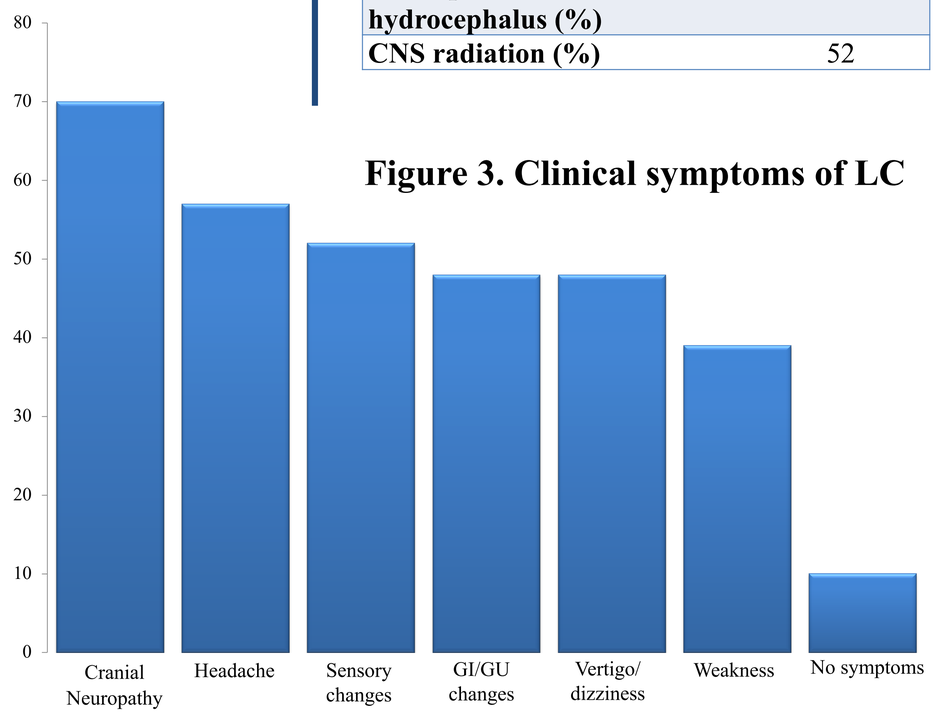
Table 1. Patient Characteristics

Patient Characteristics	Population (%)
Mean age at NSCLC diagnosis, years ± SD	57 ± 10
Gender	
Men	39
Women	61
NSCLC stage at diagnosis	
I	4
IIIB	9
IV	87
EGFR mutation type	
Exon 19 deletion	61
Exon 21 L858R mutation	39
Systemic metastatic disease development	91
Site of systemic metastatic disease	
Bone	76
Liver	29
Adrenal	10
Pleura	48
Contralateral lung	24
Other	14
Parenchymal CNS metastatic disease development	83
Median time to CNS metastases, months (95% CI)	0.6 (0.3, 4.0)

Table 2. Treatment Characteristics

Type of Treatment	Population (%)
Systemic chemotherapy	70
Primary disease directed radiation	13
Intrathecal chemotherapy	13
EGFR TKI therapy	
Any EGFR TKI	96
Any osimertinib dose	91
High dose osimertinib	57
Immunotherapy (%)	35
Shunt placement for hydrocephalus (%)	13
CNS radiation (%)	52

Figure 3. Clinical symptoms of LC



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