Tumor Types from Chamberlain review article

- Melanoma and SCLC have strongest propensity for LM, up to 25%
- Breast – 2 to 5% of all patients with metastatic breast CA
- Based on frequency of each cancer
- *Accept in Korea
  - Gastric

Primary CA	% Total
Breast	27-50
Lung	22-36
AdenoCA	50-56
SqcellCA	26-36
SCLC	13-14
Melanoma	12
GU	5
Head & N	2
Unkn 1^0	2

Clinical Features

- Classically presents with pleomorphic findings in 3 domains of neurologic function
  - Cerebral (15-50%)
    - Headache and mental status changes
    - Followed by confusion, cognitive impairment, seizures, and hemiparesis
  - Cranial nerve dysfunction (35-50%)
    - Diplopia (VI, III, IV), trigeminal sensory or motor, cochlear dysfunction, and optic neuropathy
      - Cranial Nerve VI is most commonly involved? Why?
      - Name that Nerve!
  - Spinal (60-70%) –LEs > UEs
    - Weakness, dermatomal sensory loss, pain in the neck, back, or in radicular patterns
    - Classic nuchal rigidity only 15-20% **(CH)**

Symptoms* of (Breast) Meningeal Carcinomatosis from Gauthier et al

Headache	34%
Cranial nerve symptoms	25
Cerebellar signs	24
Nausea and vomiting	23
Visual disturbance	22
Radicular pain	21
Glascow coma scale < 15	21
Paresthesia	19
Meningismis	12
Motor deficit	11
Dysarthria	2

*** Symptoms on presentation!**

Symptoms of (Gastric) Leptomeningeal Carcinomatosis from Oh et al.

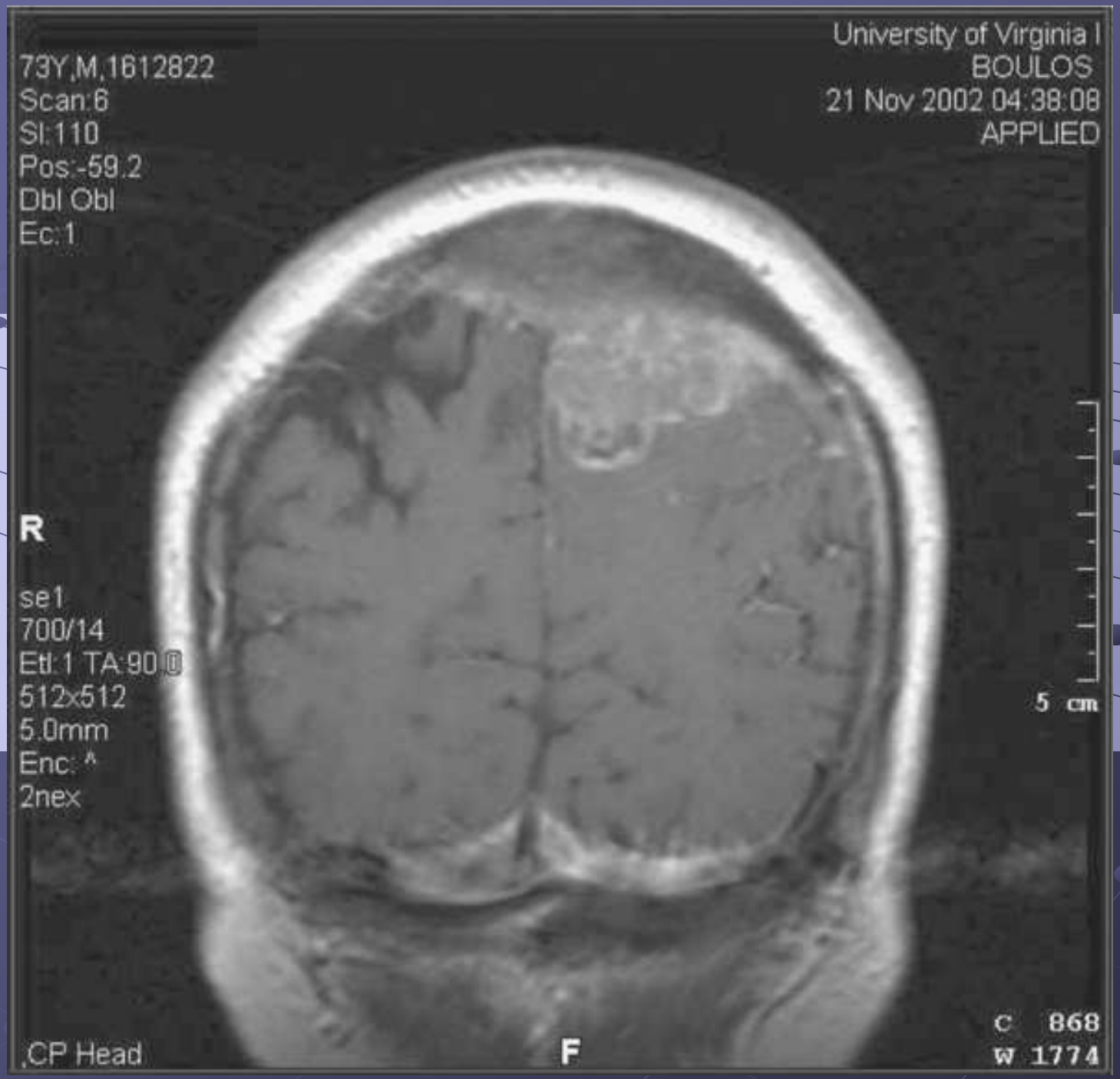
Cerebral Symptoms		Cranial Symptoms	
Headache	85%	Diploplia	6%
N & V	59	Hearing loss	4
Dizziness	24	Facial palsy	2
Mental Change	22	Ptosis	2
Seizure	19	Spinal Symptoms	
Gait	4	Weakness	11
Dysarthria	4	Paresthesia	4
Psychosis	2	Back pain	2

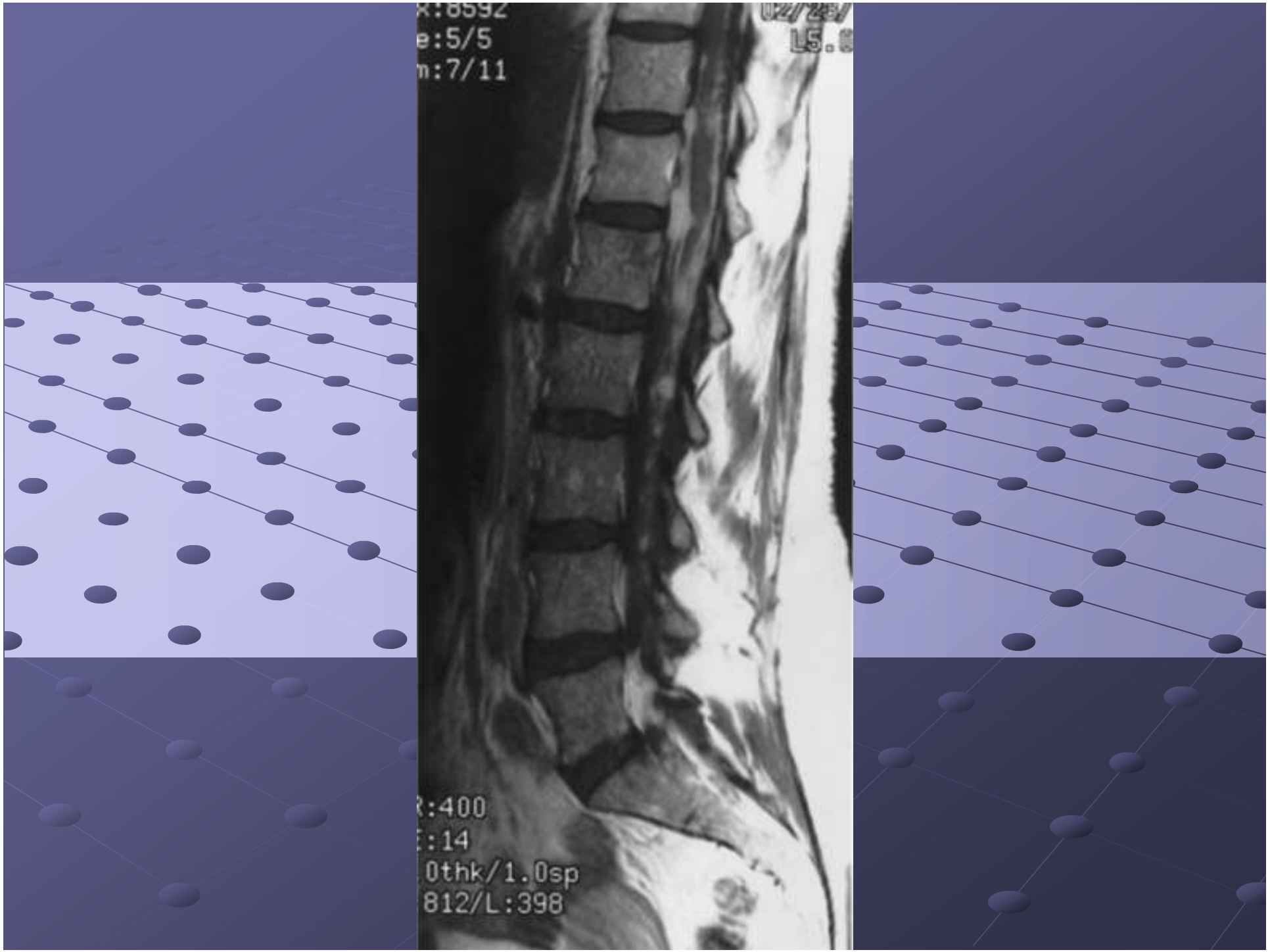
Diagnosis

- Usually presents in patients with widespread disease – 70% (JJ)
  - May present after disease free interval – 20%
  - Sole site of relapsed DZ with increasing frequency (CH)
  - Occasionally in absence of systemic DZ – 5%
- Symptoms sometimes for weeks or months (JJ&CH)
- May seem benign or stable (CH was being treated for migraine and JJ for vertigo 2^0 viral illness)
- Once recognized often progresses rapidly
- High index of suspicion with multifocal Neurologic dysfunction

Diagnostic Testing

- Gadolinium enhanced MRI
  - If Lumbar Puncture is done first may cause false (+) MRI
  - Neither CH or JJ could have MRI because of metal in expandable breast implants
- Examination of CSF
  - Cytology maybe false (-) ~ 10-30%
  - Clinical suspicion, + MRI, and CSF signs but negative cytology may be enough for Dx and Rx
- CSF flow study
  - Neither of our patients had this, rarely done locally?
- Meningeal biopsy


73Y,M,1612822
Scan:6
Sl:110
Pos:-59.2
Dbl Obl
Ec:1
University of Virginia I
BOULOS
21 Nov 2002 04:38:08
APPLIED
R
se1
700/14
Etl:1 TA:90 0
512x512
5.0mm
Enc: A
2nex
5 cm
,CP Head
F
C 868
W 1774


e:5/5
m:7/11
:400
:14
0thk/1.0sp
812/L:398

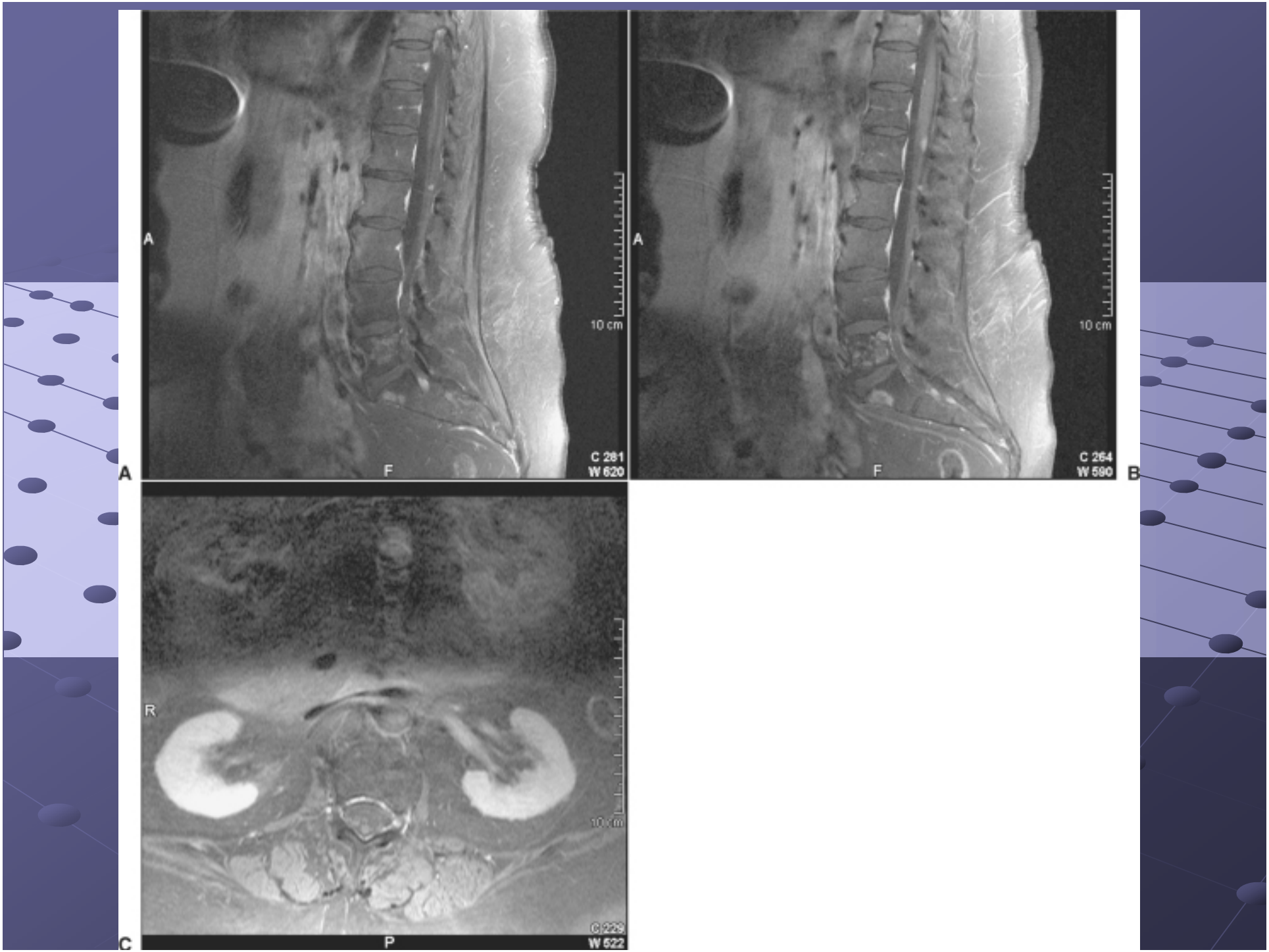

A
A
10 cm
F
C 281
W 620
A
10 cm
F
C 264
W 590
B
R
10 cm
C
P
C 228
W 522

Table 56F-3 -- Diagnostic Tests for Leptomeningeal Metastases

TEST	MEASUREMENT	POSITIVE FINDINGS
Lumbar puncture	Lymphocytic pleocytosis	>70%
	Elevated opening pressure	50%
	Elevated protein	75%
	Reduced glucose	30%–40%
	Cytology after 1 lumbar puncture	50%
	Cytology after 3 lumbar punctures	90% (< 100%)
	CSF markers	Variable
	Immunohistochemistry	Variable
	PCR	Variable
Brain MRI	Meningeal enhancement	>50%
	Enlarged ventricles	<50%
Spine MRI/myelogram	Subarachnoid masses	<25%
	Meningeal enhancement	>50%

CSF, cerebrospinal fluid; MRI, magnetic resonance imaging; PCR, polymerase chain reaction.

From Bradley: Neurology in Clinical Practice, 5th ed.