# MRI IN VERNON


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THE UNIVERSITY OF BRITISH COLUMBIA

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# FACULTY DISCLOSURE

- No commercial financial interests to disclose.

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# OUTLINE

1. INTRODUCTION TO MRI AT VJH
2. ORDERING PROCESS
3. INDICATIONS FOR MRI
4. CHOOSING WISELY
5. CONSIDERATIONS FOR JOINT IMAGING

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# INTRODUCTION TO MRI

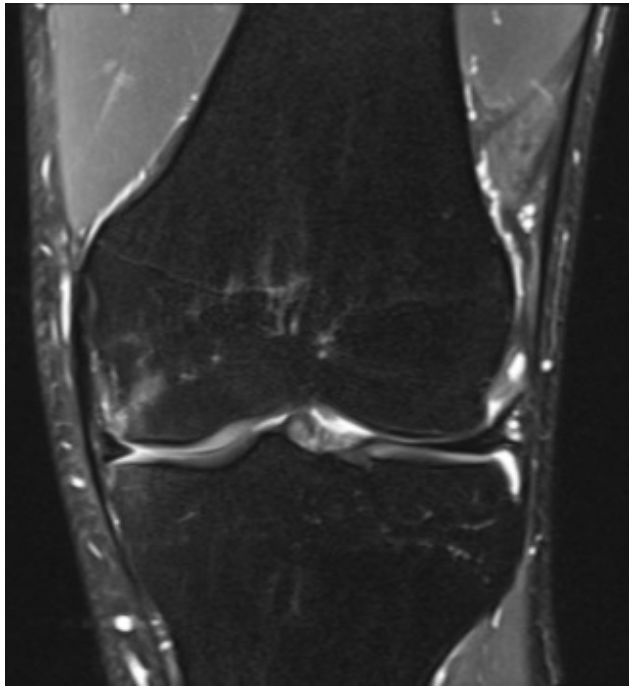
# INTRODUCTION TO MRI

•MRI (Magnetic Resonance Imaging) uses strong electromagnetic fields and radio-frequency (RF) energy to generate images

•Unlike CT, MRI does not use ionizing radiation.

•90% to 95% of MRI studies are outpatient exams.

•MRI is primarily used for soft tissue imaging; joint cartilage/tendons,  neurological, spine, cardiac and breast.



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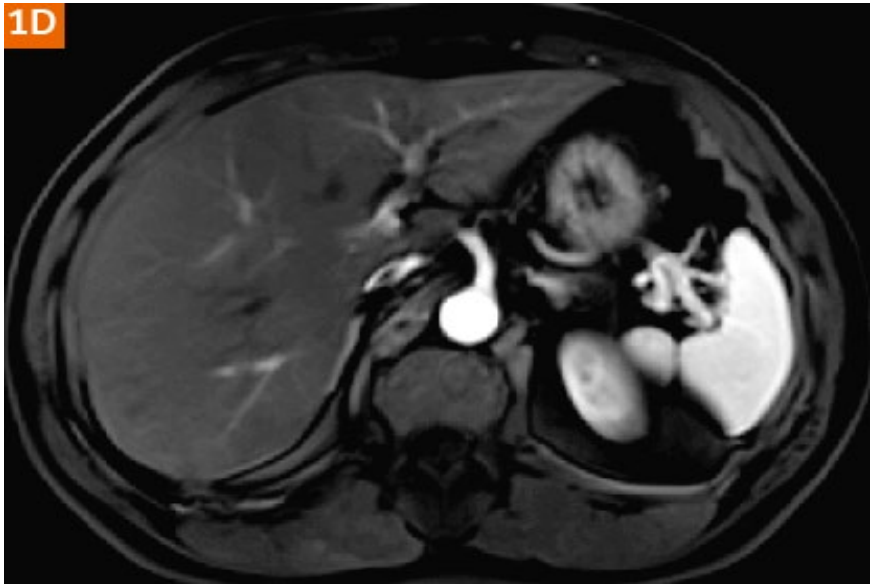
# MRI SERVICE AT VJH

# MRI SERVICE AT VJH

- 1.5T Siemens Sola Platform – State of the Art
- 70 cm bore – largest in IH
- New MRI suite
- 7 days per week, evening and weekend hours
- Services offered: joint, spine, neuro, abdomen, pelvis, breast, prostate
- Services not offered: cardiac MRI, sedation/anesthesia, MRI-guided biopsy



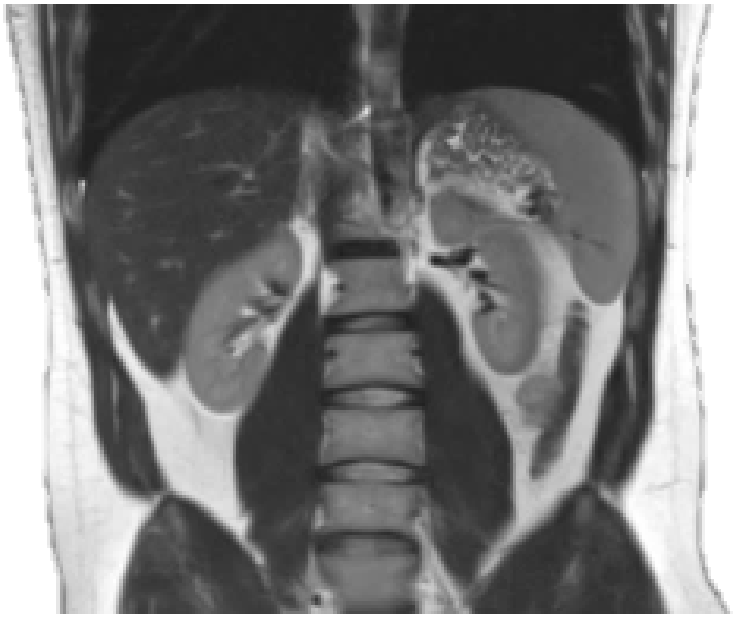

# Significantly accelerate entire MSK scans with SMS TSE
# Foot/Ankle examination

SIEMENS Healthineers

# MRI SERVICE AT VJH

*Reporting*:

- Drs. Weathermon, Boyd, Foley fully qualified
- Drs. Middelkamp and Thurgur refreshing their MRI training



# WHEN IS IT OPENING?


SEPTEMBER 2019

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# ORDERING

# ORDERING

- Service limited by funding level
- Exams may be substituted or referring physician may be contacted to obtain further details to ensure appropriate and high-quality service
- No ordering restrictions for certain providers
- For emergent exams, request should be discussed with MRI radiologist

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**MRI REQUISITION AND SAFETY QUESTIONNAIRE**

**Booking Office Use**
Appointment Date / Time _____

**IMPORTANT: Incomplete or illegible forms will be returned. Exam will be delayed or cancelled.**

| Surname of Patient | First Name and Middle Initial | Gender ☐ M ☐ F | Date Received |
|---|---|---|---|
| Address | City / Town | | Postal Code |
| Personal Health Number | DOB: (dd / mmm / yyyy) | Name of Physician & MSP Practitioner Number (or office stamp) | |
| Billable To: ☐ MSP ☐ ICBC ☐ WORKSAFEBC Claim #: _____ ☐ Patient ☐ Other: | | | |
| Telephone # (daytime) | Telephone # (other) | Telephone # (other) | Fax #: |
| Available on short notice ☐ Yes ☐ No | Unavailable dates | | |
| Allergies or previous drug reactions | Patient Height | Patient Weight | Patient can lie still for minimum one hour ☐ Yes ☐ No |

☐ Ambulatory ☐ Wheelchair ☐ Mechanical Lift ☐ IV Problems / PIC Line ☐ Ambulance

| PATIENT PRE-EXAMINATION | EXAM REQUESTED |
|---|---|
| ***For the patient's safety this screening section MUST be completed in full before the exam will be booked.*** | PRIORITY LEVEL |
| ☐ Yes ☐ No Claustrophobic (if yes, consider Ativan®) | ☐ P1 Emergent |
| ☐ Yes ☐ No Cardiac Pacemaker or Implanted Cardiac Device (***if yes, PROVIDE INFORMATION***) _____ | *(Physician must speak with radiologist)* |
| | ☐ P2 Urgent |
| | ☐ P3 Semi-urgent |
| ☐ Yes ☐ No Breast Tissue Expander (if yes, ***DO NOT ORDER MRI***) | ☐ P4 Non-urgent |
| ☐ Yes ☐ No Artificial Heart Valve / Coronary or Vascular Stent / Catheter or Filter, | ☐ P5 Date Specific |

MRI REQ

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# MRI Requisition and Safety Questionnaire Information

## MRI Priority Categories

Adopted by the Medical Imaging Advisory Committee (MIAC) and Ministry of Health of BC, June 2011.
Developed by the B.C. Radiological Society (Sept. 2010).

| | |
|---|---|
| **P1 - Emergent** | Where the imaging is critical for the immediate management of the patient. The patient / case should **be directly discussed with the Radiologist**. This includes Inpatients, Outpatients and Emergency patients. |
| **P2 - Urgent** | Lesions / Disease conditions in which immediate treatment is not necessary, or history and physical findings do not require immediate treatment but **DO require prompt evaluation**. The results of the MRI study will likely alter patient management and provide additional information for surgical or medical management. |
| **P3- Semi-urgent** | Lesions / Disease conditions in which immediate treatment is not necessary, or history and physical findings **DO NOT require immediate treatment** and delays in MRI evaluation will not negatively affect treatment outcomes. The results of the MRI study will likely alter patient management and provide additional information for surgical or medical management. |
| **P4 - Non-urgent** | When MRI is required for follow-up on patients with stable findings, or lesions / disease conditions which may undergo slow progression, or when surgery is not required, or limited therapeutic options are available. |
| **P5- Date Specific** | This category is used when a specific date or follow-up timeline is required. |

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# Summary of BCRS MRI Prioritization 2013 Guidelines

| | General: Overview* | | | |
|---|---|---|---|---|
| | **Priority Level 1**<br>**Emergent**** | **Priority Level 2**<br>**Urgent** | **Priority Level 3**<br>**Semi-urgent** | **Priority Level 4**<br>**Non-urgent** |
| | Immediately to 24 hours | Benchmark –<br>7 calendar days | Benchmark –<br>30 calendar days | Benchmark –<br>60 calendar days |
| **Neuro** | ▪ Pre-operative CNS neoplasm or vascular malformation evaluation<br>▪ Acute hydrocephalus<br>▪ CNS infection<br>▪ CNS venous thrombosis<br>▪ Acute spine injury/cord compression/acute cord syndrome<br>▪ Acute stroke<br>▪ High grade ICA Stenosis and/or dissection | ▪ Staging of malignancy<br>▪ New onset of symptomatic white matter disease NYD<br>▪ Acute MS, considering therapy<br>▪ Symptomatic orbital mass | ▪ Sellar lesions-no clinical deficits (ie pituitary microadenoma)<br>▪ Multiple Sclerosis<br>▪ Orbital mass-no clinical deficits | ▪ Dementia<br>▪ Neurodegenerative disorders<br>▪ Non-surgical/chronic seizure disorders, no EEG focus<br>▪ Cerebral aneurysm screenings (familial, polycystic kidneys) |
| **Body** | ▪ Acute abdomen in pregnancy (appendicitis, renal colic)<br>▪ Acute abdominal aortic aneurysm/acute aortic syndrome | ▪ Staging of malignancy<br>▪ Donor assessment-pre-transplant (biliary/pancreatic)<br>▪ Fetal- placental localization | ▪ MRCP<br>▪ Pre-liver transplant assessment of hepatic vasculature<br>▪ Fetal evaluation<br>▪ Arterial stenosis (renal artery stenosis, chronic mesenteric ischemia, aortic runoffs, claudication)<br>▪ Enterography (inflammatory bowel disease) | ▪ Benign neoplasm characterization (adrenal adenoma, ovarian dermoid, hemangioma liver)<br>▪ Uterine fibroid, adenomyosis (pre-uterine fibroid embolization)<br>▪ Perianal fistula<br>▪ Congenital uterine anomaly |
| **Chest** | ▪ Acute aortic dissection | ▪ Staging of malignancy<br>▪ Cardiac viability<br>▪ Assessment of cardiac mass/thrombus | | ▪ Thoracic outlet syndrome – routine pre-surgical<br>▪ Cardiac ARVD<br>▪ Breast implant evaluation |
| **MSK** | ▪ Muscle necrosis/compartment syndrome<br>▪ Infection | ▪ Occult fractures | ▪ Brachial plexopathy (non-surgical, ie tumour infiltration)<br>▪ Acute spine symptoms (ie refractory pain)<br>▪ Acute joint symptoms (ACL, meniscus, AVN) | ▪ Musculoskeletal storage disorder (Gaucher's)<br>▪ Bone and soft tissue benign neoplasm characterization (lipoma)<br>▪ Chronic joint and spine symptoms<br>▪ TMJ derangement |
| **Pediatric** | | ▪ Non-accidental trauma<br>▪ Acute Disseminated Encephalomyelitis (ADEM)<br>▪ Staging of malignancy<br>▪ Congenital cardia evaluation-cyanotic | ▪ Congenital cardiac evaluation - noncyanotic | ▪ Scoliosis evaluation<br>▪ Congenital anomaly assessment<br>▪ Periventricular leukomalacia<br>▪ Hypoxic ischemic encephalopathy |

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# CENTRALIZED INTAKE

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Every person matters

## MRI Requisition Fax Cover

**Date:**

**Fax Sent From:**

**Patient Name:**

**Referring Practitioner Name:**

**Pages:** Including the cover page. (If all pages were not received, please inform the sender.)

**Please rank only those sites that the patient is willing to go to have their MRI Exam and fax to the first choice only.**

**Exams will be booked at a selected site other than the first preference if there is a significantly shorter wait time.**

| Site | Preference Ranking (1,2,3) |
|---|---|
| East Kootenay Regional Hospital, Cranbrook | |
| Kelowna General Hospital, Kelowna | |
| Kootenay Boundary Regional Hospital, Trail | |
| Penticton Regional Hospital, Penticton | |
| Royal Inland Hospital, Kamloops | |
| Vernon Jubilee Hospital, Vernon (after Summer 2019) | |

Note: **For Priority 1 (Emergency) exams phone your local Medical Imaging Dept.**
Priority codes 2-4 are to be assigned following the BC Radiological Society Guidelines and may be changed by Medical Imaging.
If you require an exam to be expedited state the reason in the Reason/Tentative Diagnosis/Medical History Section.

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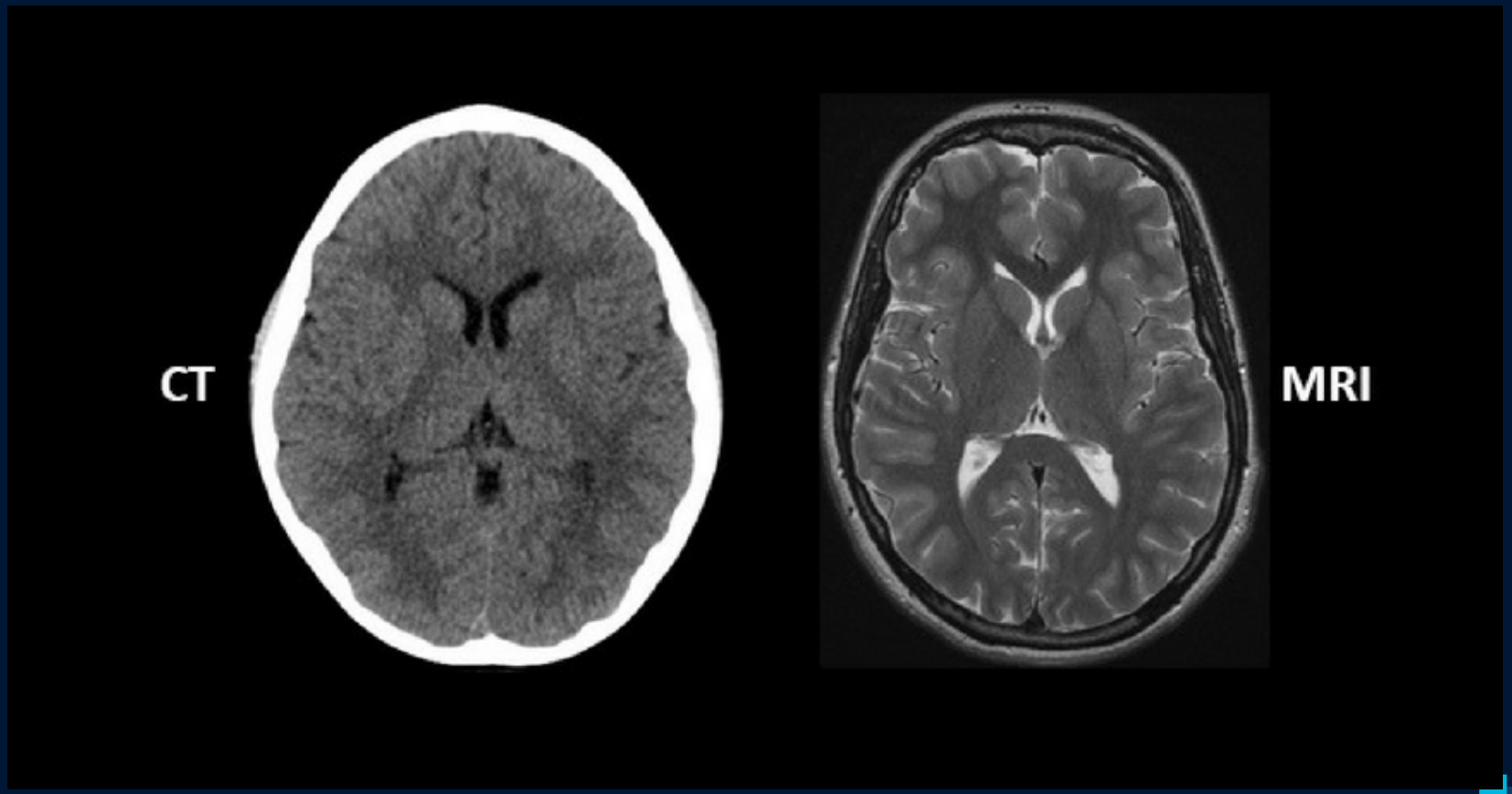
# MRI - INDICATIONS

# CT VS MRI

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# CT VS MRI

**Advantages of CT:**

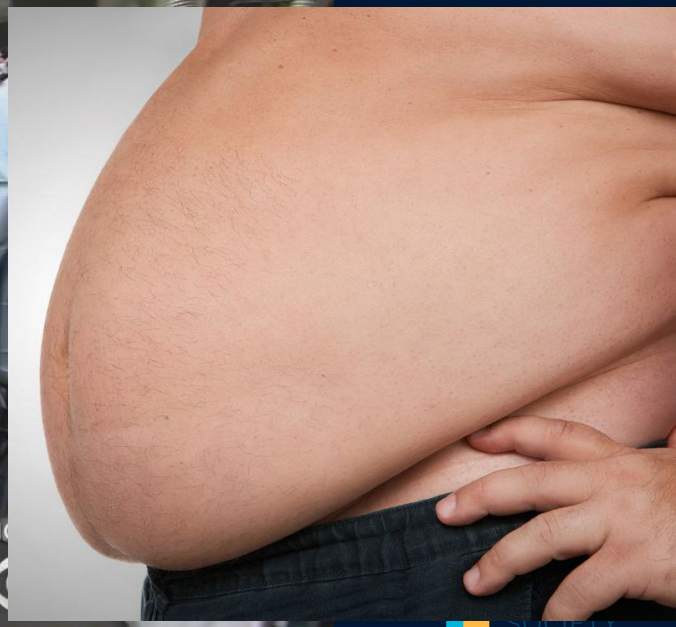
Speed – much faster to acquire, motion artefact

Claustrophobic/obese

No risk with implanted devices, ferromagnetic clips, nerve stimulators

Superior depiction of cortical bone/calcifications



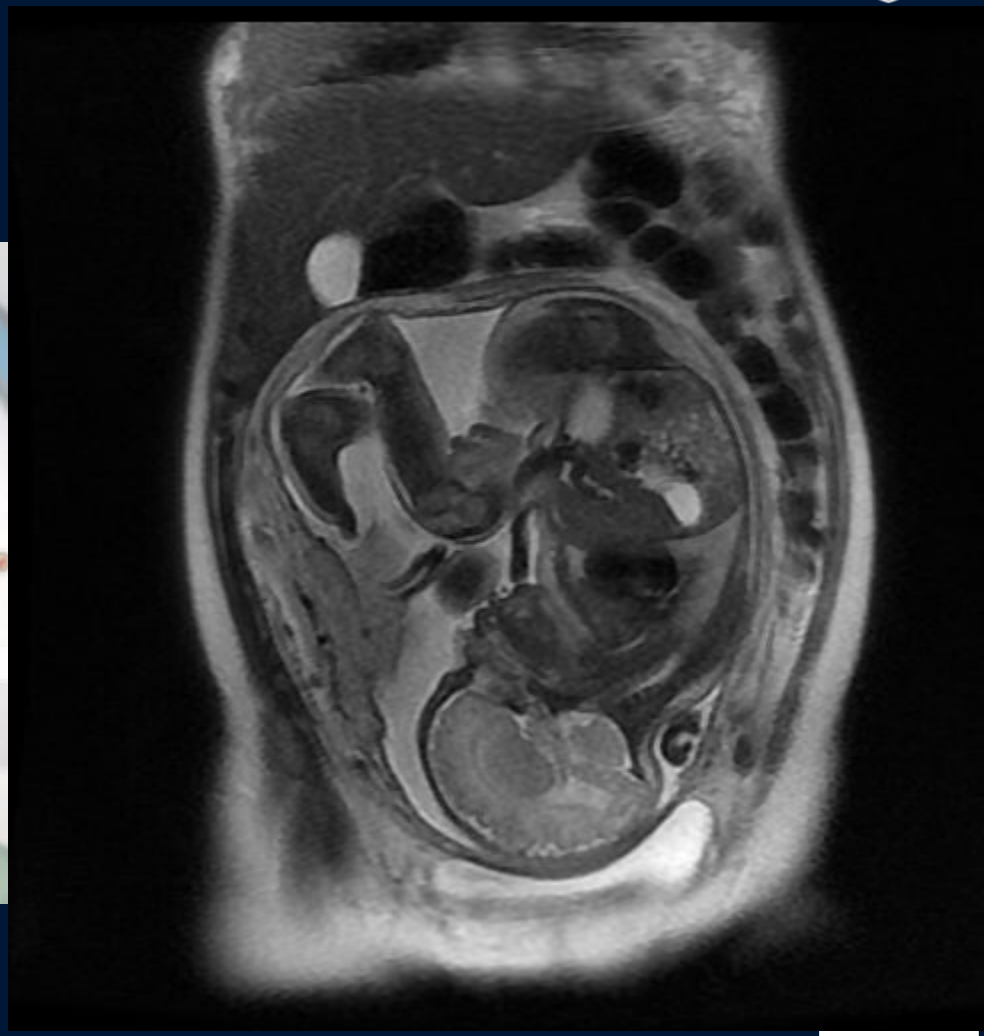
# CT VS MRI

**Advantages of MRI:**

No ionizing radiation – pregnant, pediatric patients, recurrent exams

Superior soft tissue contrast

Contrast much smaller risk of reactions



ORIGINAL ARTICLE HEALTH SERVICES RESEARCH AND POLICY

# Utilization Trends in Diagnostic Imaging for a Commercially Insured Population: A Study of Massachusetts Residents 2009 to 2013

*Stephen Flaherty, MBA, RT-R, MR[a,b], Koenraad J. Mortele, MD[c,d], Gary J. Young, JD, PhD[e]*

## Abstract

**Purpose:** To report utilization trends in diagnostic imaging among commercially insured Massachusetts residents from 2009 to 2013.

**Materials and Methods:** Current Procedural Terminology codes were used to identify diagnostic imaging claims in the Massachusetts All-Payer Claims Database for the years 2009 to 2013. We reported utilization and spending annually by imaging modality using total claims, claims per 1,000 individuals, total expenditures, and average per claim payments.

**Results:** The number of diagnostic imaging claims per insured MA resident increased only 0.6% from 2009 to 2013, whereas non-radiology claims increased by 6% annually. Overall diagnostic imaging expenditures, adjusted for inflation, were 27% lower in 2009 than 2013, compared with an 18% increase in nonimaging expenditures. Average payments per claim were lower in 2013 than 2009 for all modalities except nuclear medicine. Imaging procedure claims per 1,000 MA residents increased from 2009 to 2013 by 13% in MRI, from 147 to 166; by 17% in ultrasound, from 453 to 530; and by 12% in radiography (x-ray), from 985 to 1,100. However, CT claims per 1,000 fell by 37%, from 341 to 213, and nuclear medicine declined 57%, from 89 claims per 1,000 to 38.

**Conclusion:** Diagnostic imaging utilization exhibited negligible growth over the study period. Diagnostic imaging expenditures declined, largely the result of falling payments per claim in most imaging modalities, in contrast with increased utilization and spending on nonimaging services. Utilization of MRI, ultrasound, and x-ray increased from 2009 to 2013, whereas CT and nuclear medicine use decreased sharply, although CT was heavily impacted by billing code changes.

**Key Words:** Diagnostic imaging utilization, expenditures, trends

*J Am Coll Radiol 2018;15:834-841.* 

# TRENDS IN UTILIZATION

## TAKE-HOME POINTS

- There were minimal changes in overall utilization of diagnostic imaging for commercially insured Massachusetts residents from 2009 to 2013.
- Growth trends exist in MRI, ultrasound, and x-ray, but CT and NM utilization are declining.
- Diagnostic imaging spending overall is trending downward.
- Falling payment per claim for advanced imaging and shifts to lower-cost, lower-radiation alternatives may, in part, help to explain the reduction in imaging expenditures.

Acta Radiologica
2016, Vol. 57(9) 1040–1048

DOI: 10.1177/0284185115617349
acr.sagepub.com
SAGE

# Diagnostic performance of CT, MRI and PET/CT in patients with suspected colorectal liver metastases: the superiority of MRI

**Anselm Schulz[1], Ellen Viktil[1], Johannes Clemens Godt[1], Cathrine K Johansen[1], Johann Baptist Dormagen[1], Jon Erik Holtedahl[2], Knut Jørgen Labori[3], Tore Bach-Gansmo[1] and Nils-Einar Kløw[1]**

**Conclusion:** MRI had the significantly highest sensitivity compared with CT and PET/CT, particularly for CRLM < 10 mm. Therefore, detection of CRLM should be based on MRI.

enhanced sequences had a better diagnostic performance for CRLM compared to computed tomography (CT) and fluorine-18 fluorodeoxyglucose positron emission tomography (PET/CT).

**Material and Methods:** Forty-six patients scheduled for resection of suspected CRLM were evaluated prospectively from September 2011 to January 2013. None of the patients had undergone previous treatment for their CRLM. Multiphase CT, liver MRI with diffusion-weighted and dynamic Gd-EOB-DTPA-enhanced sequences and low-dose PET/CT were performed. Two independent, blinded readers evaluated the examinations. The reference standard was histopathological confirmation (81/140 CRLM) or follow-up.

**Results:** A total of 140 CRLM and 196 benign lesions were identified. On a per-lesion basis, MRI had the significantly highest sensitivity overall and for CRLM < 10 mm ($P < 0.001$). Overall sensitivity/specificity and PPV/NPV were 68%/94% and 89%/81% for CT, 90%/87% and 82%/93% for MRI, and 61%/99% and 97%/78% for PET/CT. For CRLM < 10 mm it was

**Conclusion:** MRI had the significantly highest sensitivity compared with CT and PET/CT, particularly for CRLM < 10 mm. Therefore, detection of CRLM should be based on MRI.

**Keywords**
Abdomen/GI, computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), liver, metastases

Date received: 20 March 2015; accepted: 21 October 2015

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ORIGINAL RESEARCH ■ EVIDENCE-BASED PRACTICE

# Hepatocellular Carcinoma: Diagnostic Performance of Multidetector CT and MR Imaging—A Systematic Review and Meta-Analysis[1]

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Jeong Min Lee, MD
Ji Sung Lee, PhD
Hwa Young Lee, MS
Bo Hyun Park, PhD
Young Hoon Kim, MD
Joon Koo Han, MD
Byung Ihn Choi, MD

**Purpose:** To perform a systematic review and meta-analysis of the diagnostic performance of computed tomography (CT) and magnetic resonance (MR) imaging as noninvasive modalities for evaluating hepatocellular carcinoma (HCC) in patients with chronic liver disease.

**Materials and Methods:** A search of the MEDLINE, EMBASE, and Cochrane Library databases was performed to identify studies pre-

**Conclusion:** MR imaging showed higher per-lesion sensitivity than multidetector CT and should be the preferred imaging modality for the diagnosis of HCCs in patients with chronic liver disease.

studies evaluated a total of 1135 patients with multidetector CT and 2489 patients with MR imaging. The overall per-patient sensitivity of MR imaging was 88% (95% confidence interval [CI]: 83%, 92%), with a specificity of 94% (95% CI: 85%, 98%). The overall per-lesion sensitivity of MR imaging was higher than that of multidetector CT when the paired data of the 11 available studies were pooled (80% vs 68%, $P = .0023$). Gadoxetic acid–enhanced MR imaging showed significantly higher per-lesion sensitivity than MR imaging performed with other contrast agents (87% vs 74%, $P = .03$). Per-lesion sensitivity was significantly lower for HCCs smaller than 1 cm than that for HCCs 1 cm or larger ($P < .001$ for CT, $P = .02$ for MR imaging) and for those in explanted livers ($P = .04$ for CT, $P < .001$ for MR imaging).

**Conclusion:** MR imaging showed higher per-lesion sensitivity than multidetector CT and should be the preferred imaging modality for the diagnosis of HCCs in patients with chronic liver disease.



*Online supplemental material is available for this article.*

[1] From the Department of Radiology, Seoul National University Bundang Hospital, Seongnam-si, Korea (Y.J.L., Y.H.K.); Department of Radiology, Institute of Radiation Medicine, Seoul National University Hospital, 101 Daehangno, Jongno-gu, Seoul 110-744, Korea (J.M.L., J.K.H., B.I.C.); Biostatistical Consulting Unit, Soonchunhyang University Medical Center, Seoul, Korea (J.S.L.); and Department of Public Health Science, Graduate School of Public Health, Seoul National University, Seoul, Korea (H.Y.L., B.H.P.).
Received April 1, 2014; revision requested May 19; revision received September 13; final version accepted October 8. Supported in part by a grant from Bayer Healthcare, Korea and Seoul National University Bundang Hospital Research Fund, Korea (grant no. 02-2013-098). **Address correspondence to** J.M.L. (e-mail: *jmsh@snu.ac.kr*).

# SHOULD I ORDER CT OR MRI?

Consider the clinical question:

- Knee: fracture (CT) vs internal derangement (MRI)?
- Head: MS (MRI) vs trauma (CT)
- Broad survey – CT more useful (multiple body areas)

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# SHOULD I ORDER CT OR MRI?

Consider the patient:

- MRI in younger, pregnant patients – no radiation
- CT in morbidly obese or claustrophobic patients
- MRI in patients who cannot have X-ray contrast (superior soft tissue contrast)

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# SHOULD I ORDER CT OR MRI?

Examinations you should think twice about when MRI available:

- CT arthrogram (consider MRI arthrogram)
- CT pituitary (consider MRI pituitary)
- CT enterography (consider MR enterography)
- CT female pelvis eg fibroids (consider MRI pelvis)

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# MRI INDICATIONS

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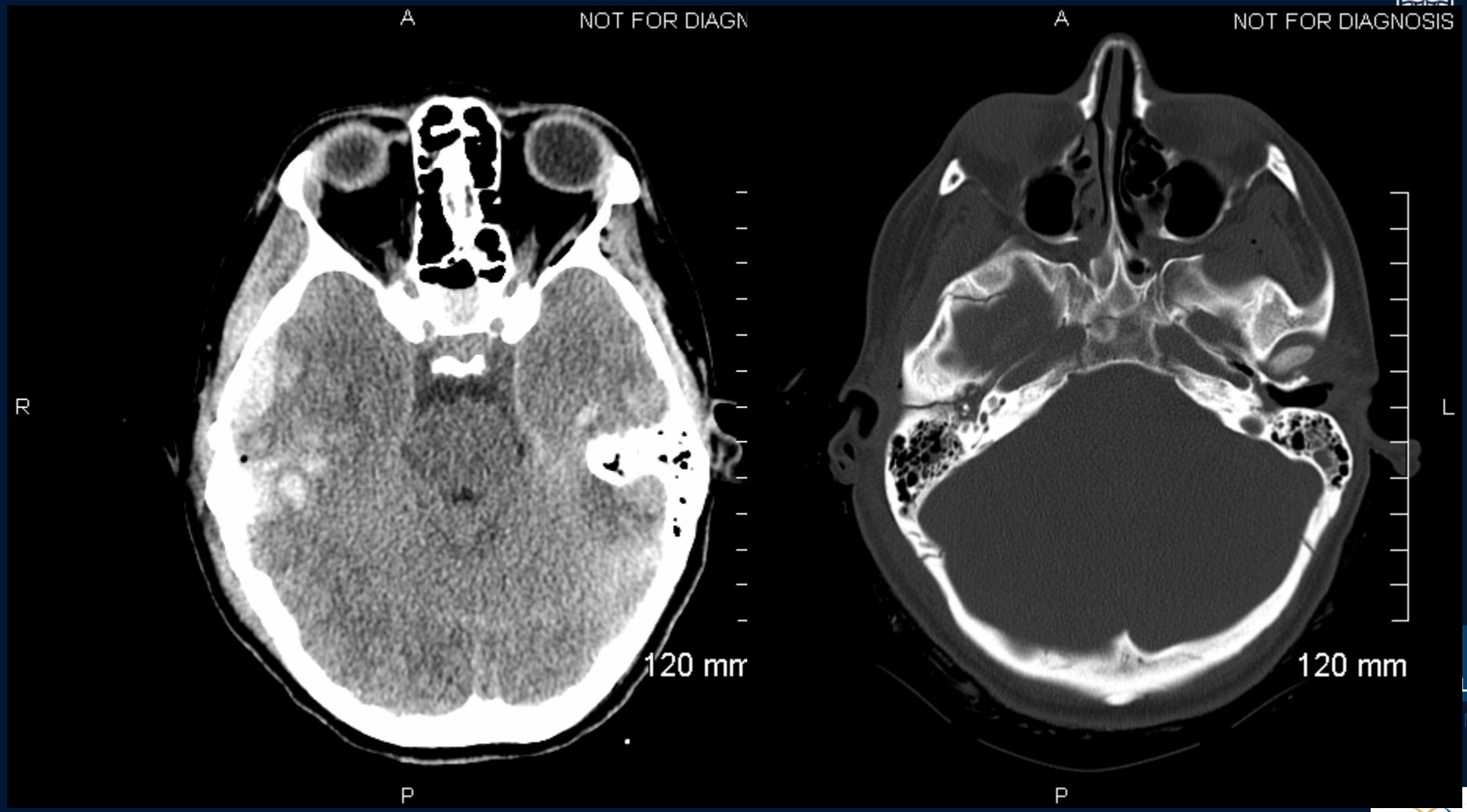
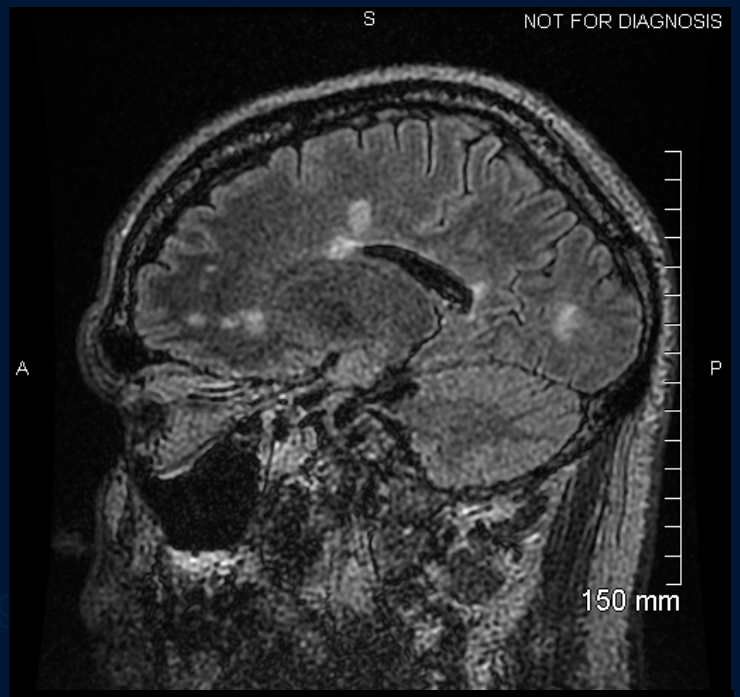
# MRI INDICATIONS - NEURO

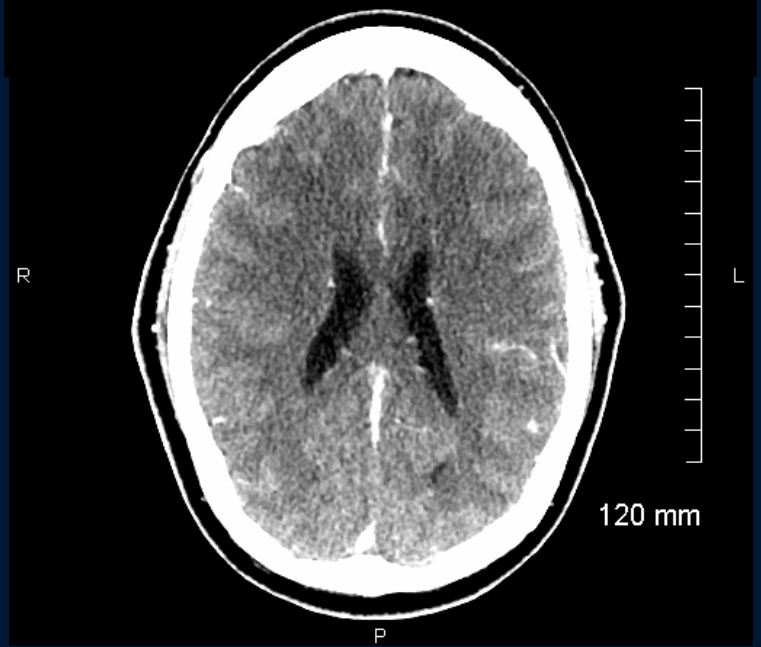
CT preferred in trauma / stroke, else MRI usually more appropriate eg. Chronic headaches



# MRI INDICATIONS - NEURO

MS, tumors, encephalopathy, infection, ischemia



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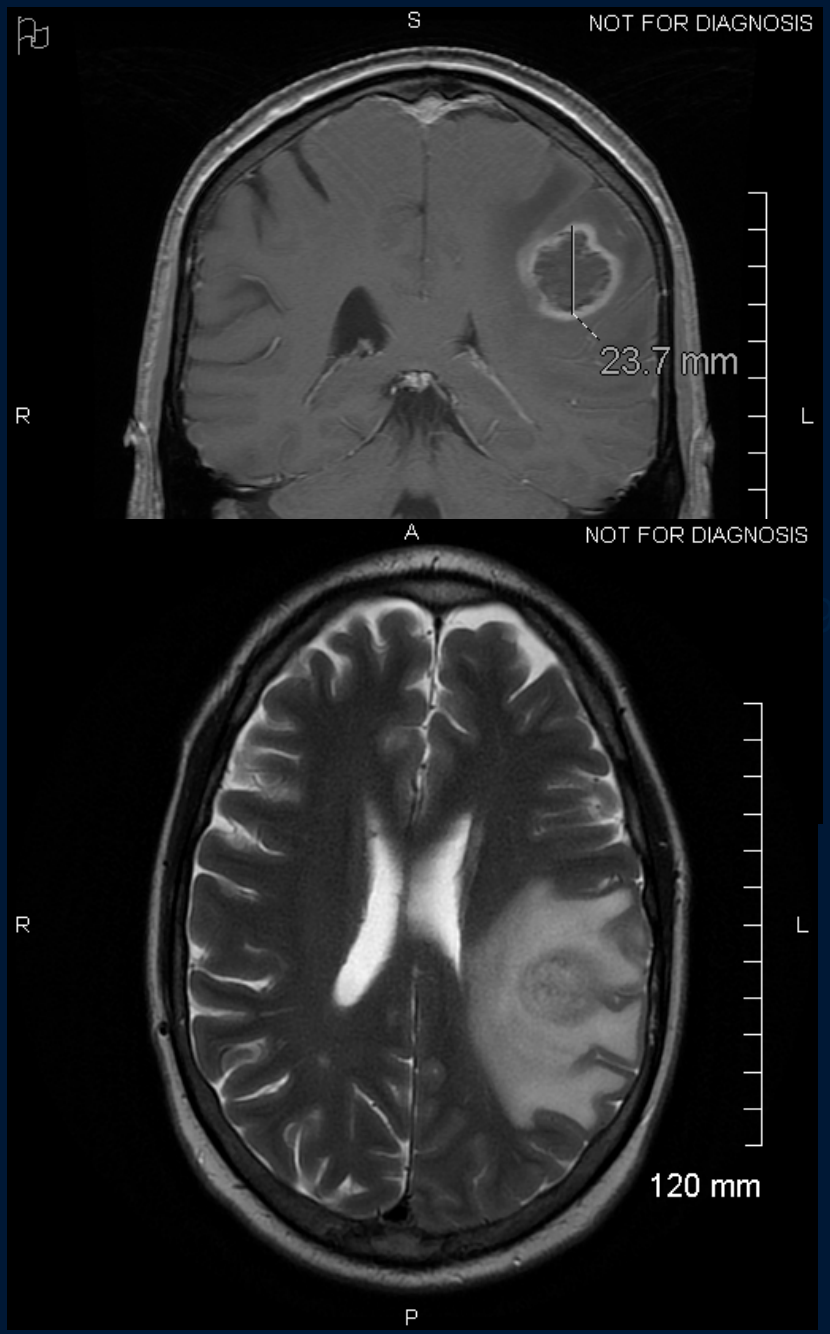
# MRI INDICATIONS - NEURO

MS, tumors, encephalopathy, infection, ischemia





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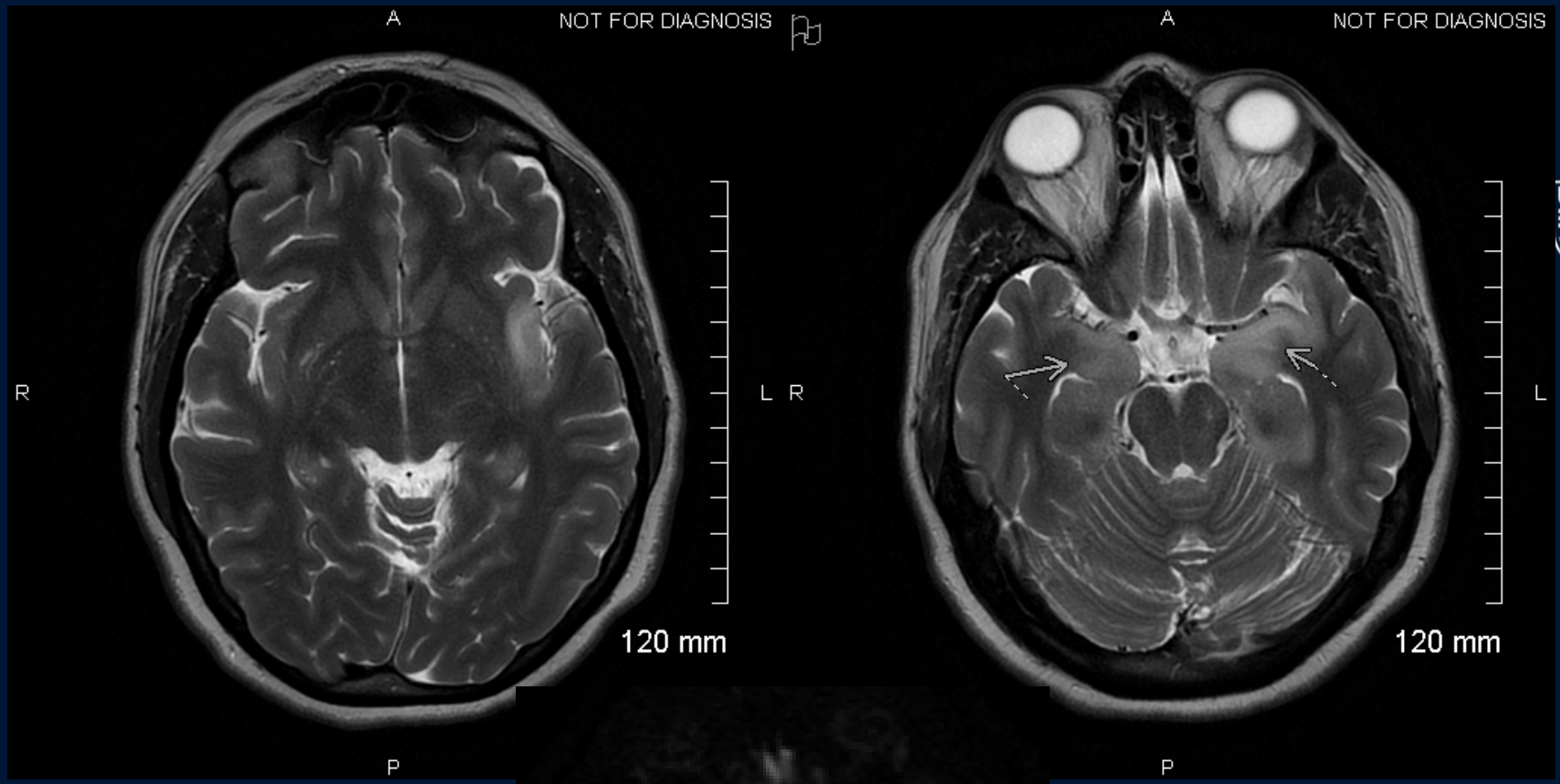
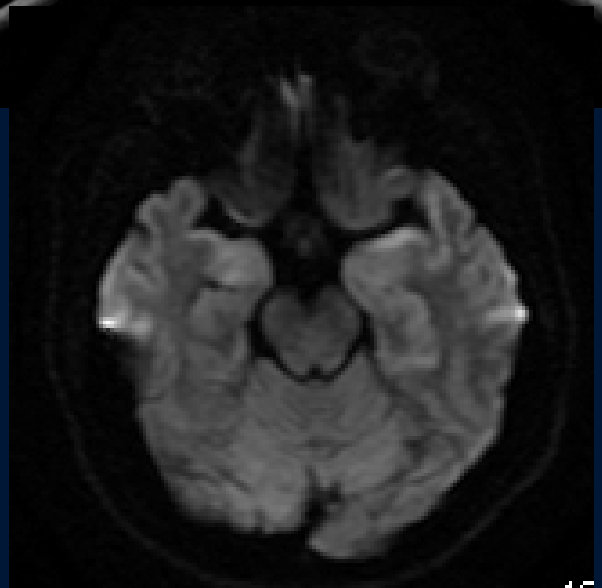
# MRI INDICATIONS - NEURO

MS, tumors, encephalopathy, infection, ischemia



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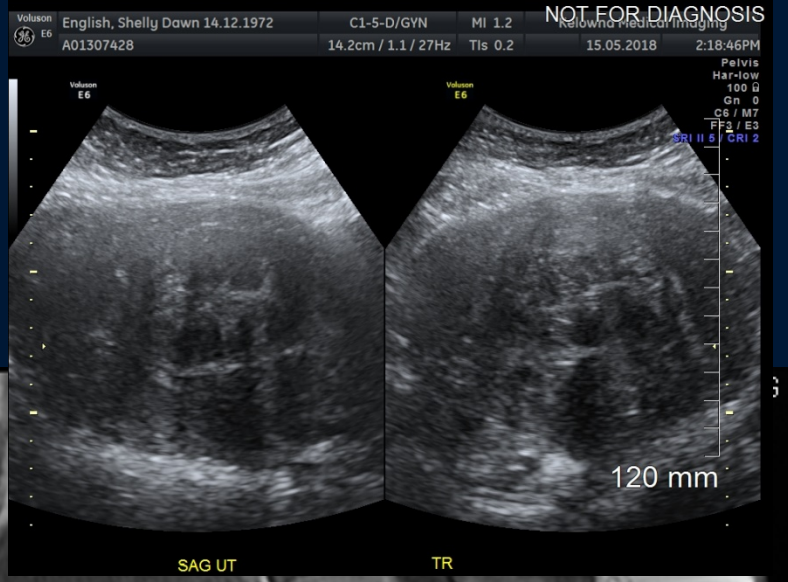
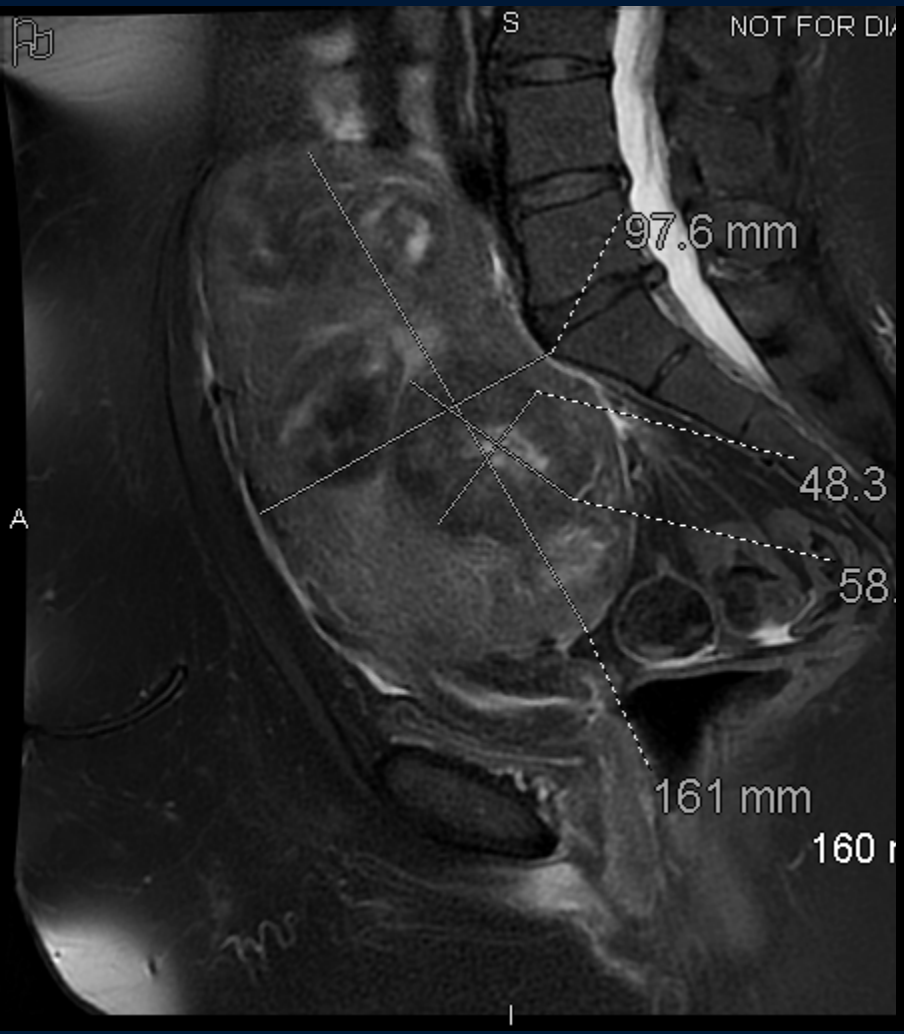
# IMAGING PATHWAYS

FEMALE PELVIS:  Ultrasound best initial examination, MRI second line, CT less appropriate





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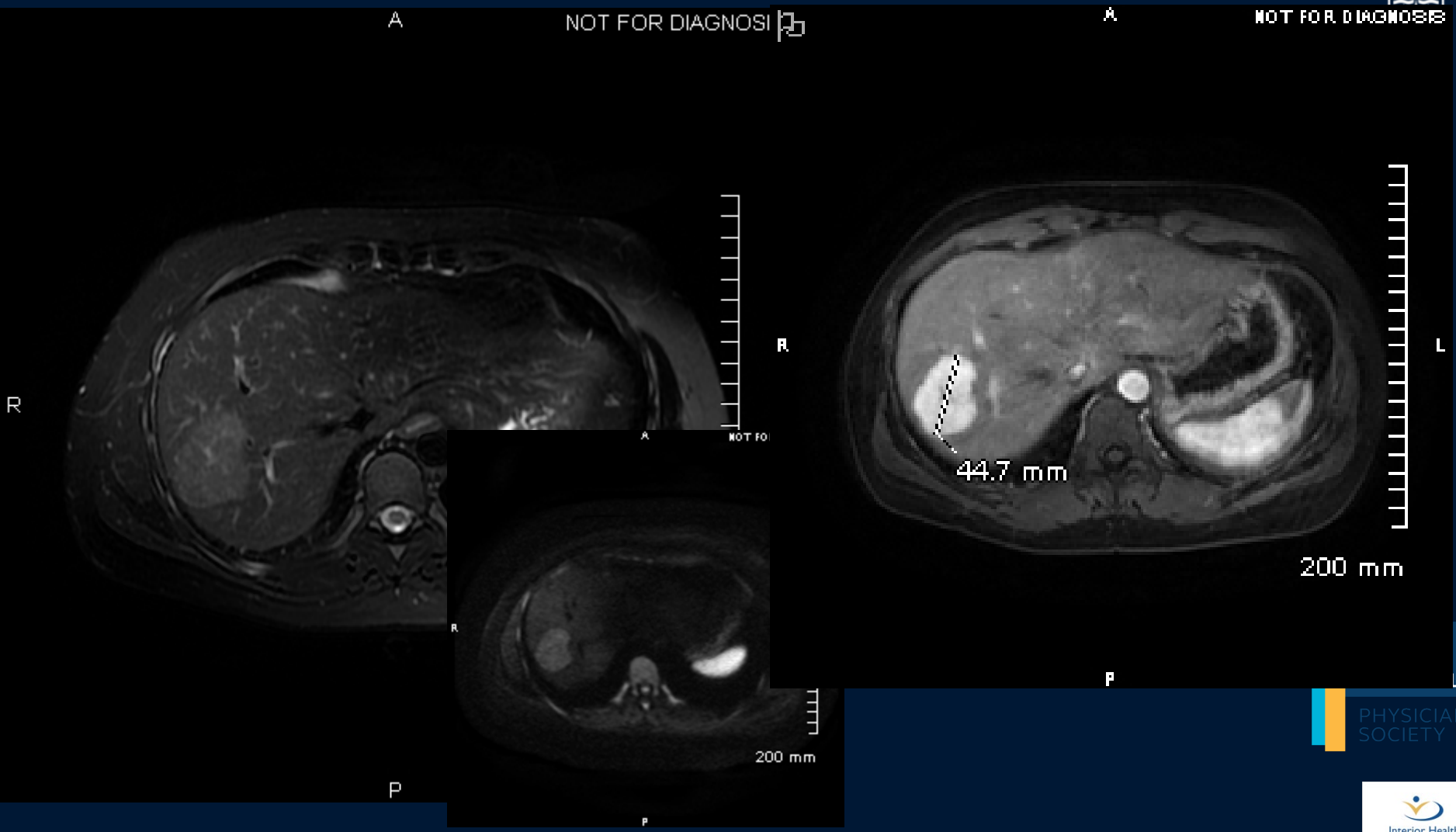
# IMAGING PATHWAYS

LIVER: Abdomen – MRCP, liver mass, MR enterography, MR urography

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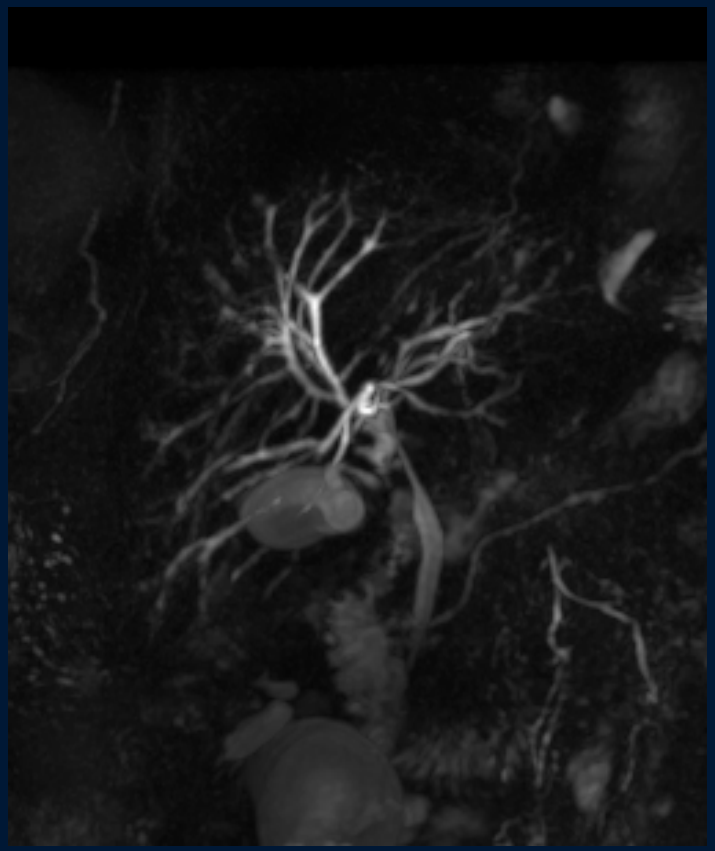
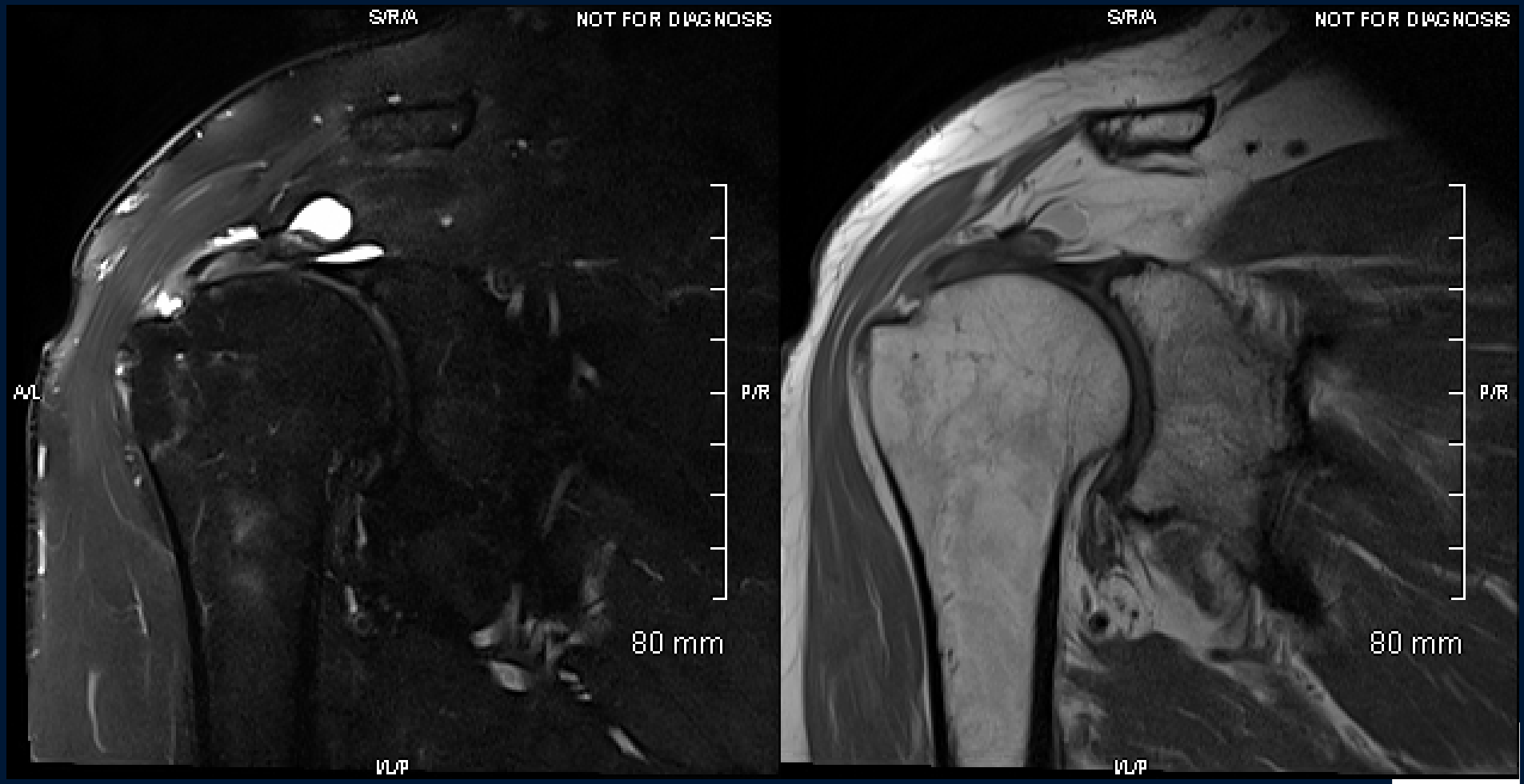
# IMAGING PATHWAYS

BILIARY/PANCREAS: ultrasound often appropriate, MRCP is less invasive than ERCP but intervention cannot be performed



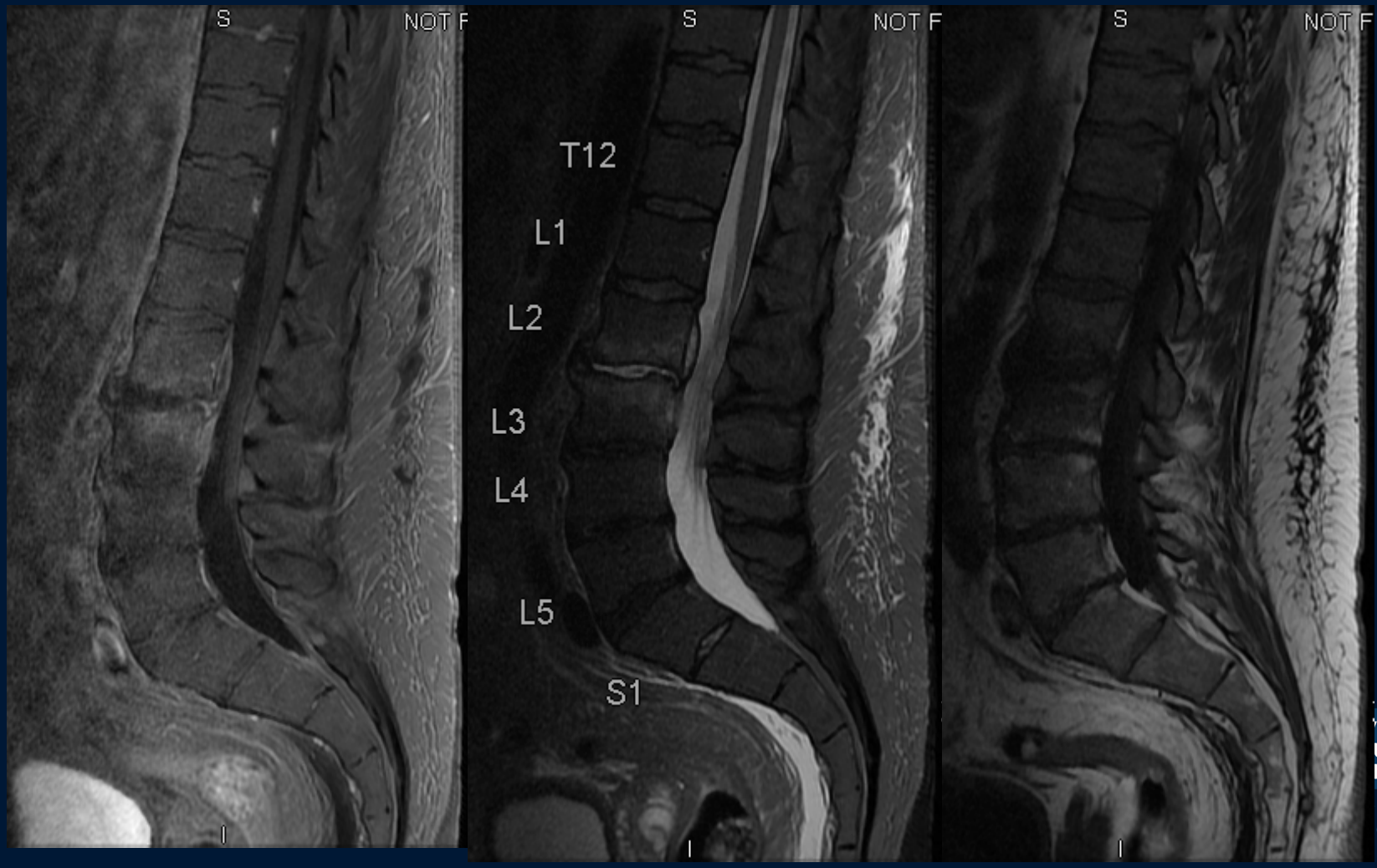
# IMAGING PATHWAYS

SHOULDER: MRI and MR arthrogram for internal derangement (labral tears, rotator cuff), X-ray for osteoarthritis, fractures with CT



# IMAGING PATHWAYS

SPINE: spondylodiscitis, tumors, myelopathy, trauma

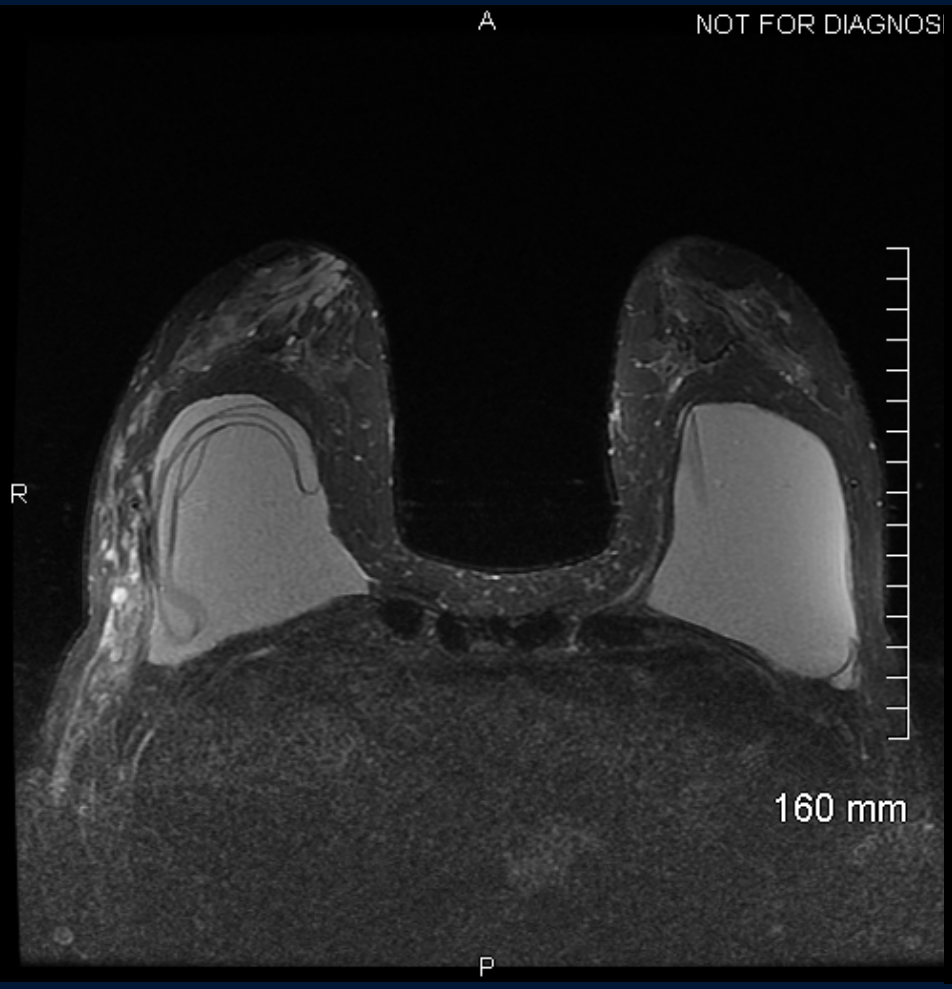


# IMAGING PATHWAYS

SPINE: spondylodiscitis, tumors, myelopathy, trauma

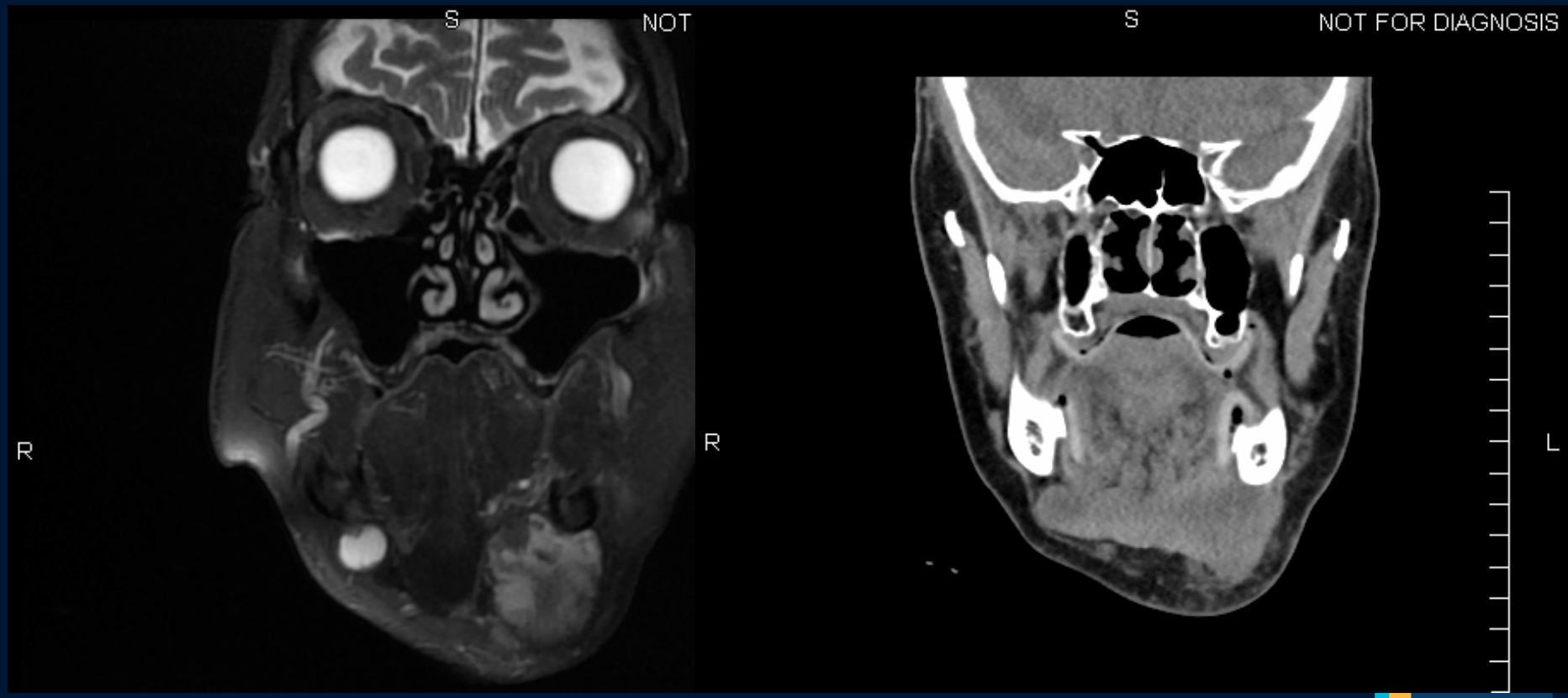

# IMAGING PATHWAYS

BREAST: implant assessment, screening in high risk patients, staging.  Mammography and ultrasound more appropriate initial investigations



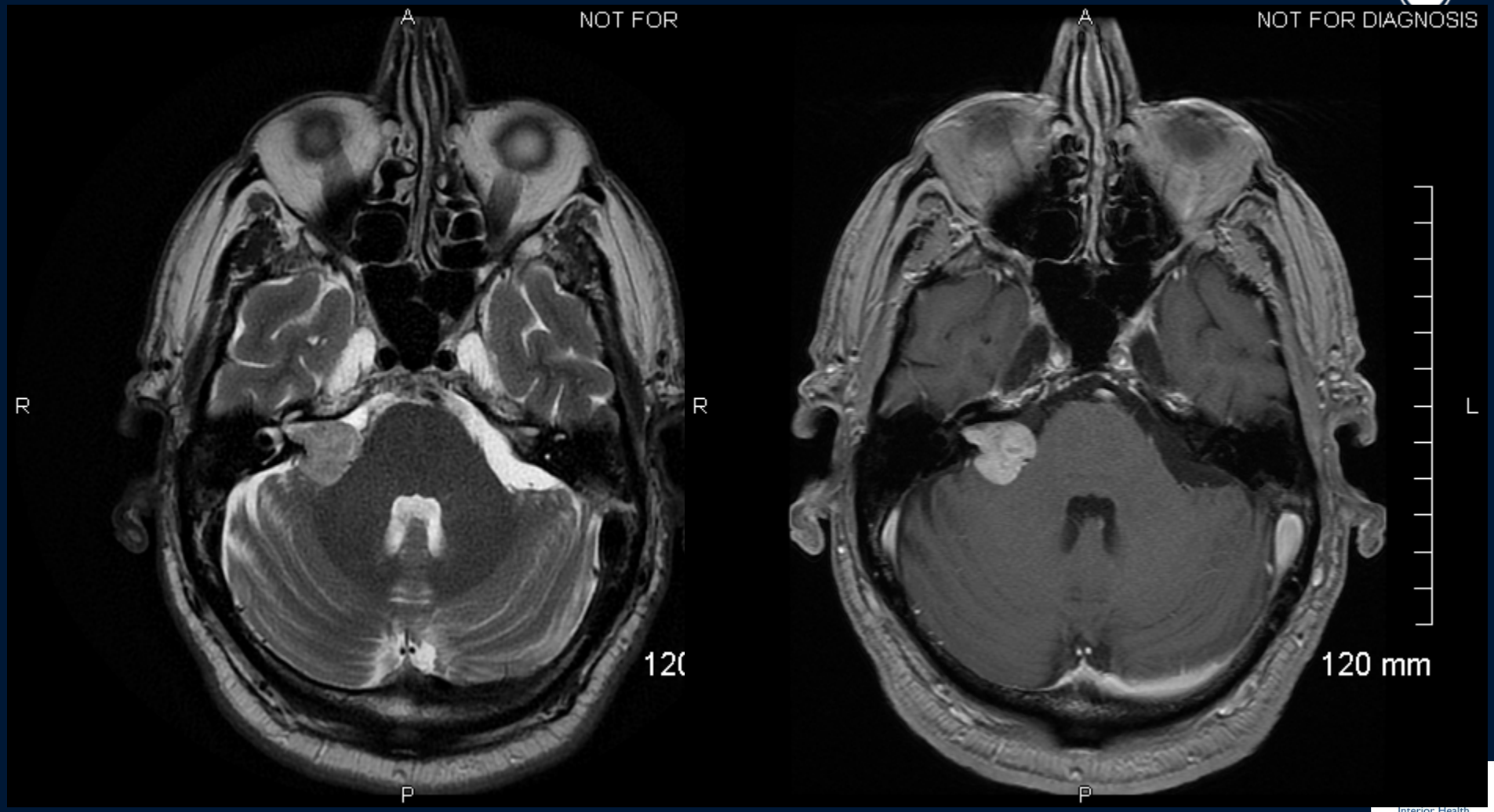

# IMAGING PATHWAYS

NECK: MRI usually superior though similar information to CT



# IMAGING PATHWAYS

TEMPORAL BONE / IACs: MRI for IAC / sensorineural hearing loss, CT temporal bones for middle ear / conductive hearing loss



# CHOOSING WISELY

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# CHOOSING WISELY

**Don’t order an MRI for suspected degenerative meniscal tears or osteoarthristis (OA).**

“Degenerate meniscal tears and osteoarthritis (OA) are extremely common in the general population. Early degenerative changes in the meniscus can be found in many subjects under the age of 30. By 50 to 60 years of age, full degenerative meniscal tears are commonly found in 33-50% of subjects. Unless associated with the presence of osteoarthritis (OA), these degenerative meniscal tears are most often asymptomatic. Magnetic resonance imaging (MRI) is not recommended for degenerative meniscal tears unless there are mechanical symptoms (e.g., locking) or lack of improvement with conservative treatment (exercise/therapy, weight loss, bracing, topical or oral analgesia, intra-articular injections). MRI is not recommended for the diagnosis or management of OA. Weight-bearing X-rays should be ordered instead.”

ORIGINAL ARTICLE

# Incidental Meniscal Findings on Knee MRI in Middle-Aged and Elderly Persons

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## ABSTRACT

### BACKGROUND

Magnetic resonance imaging (MRI) of the knee is often performed in patients who have knee symptoms of unclear cause. When meniscal tears are found, it is commonly assumed that the symptoms are attributable to them. However, there is a paucity of data regarding the prevalence of meniscal damage in the general population and the association of meniscal tears with knee symptoms and with radiographic evidence of osteoarthritis.

### METHODS

We studied persons from Framingham, Massachusetts, who were drawn from census-tract data and random-digit telephone dialing. Subjects were 50 to 90 years of age and ambulatory; selection was not made on the basis of knee or other joint problems. We assessed the integrity of the menisci in the right knee on 1.5-tesla MRI scans obtained from 991 subjects (57% of whom were women). Symptoms involving the right knee were evaluated by questionnaire.

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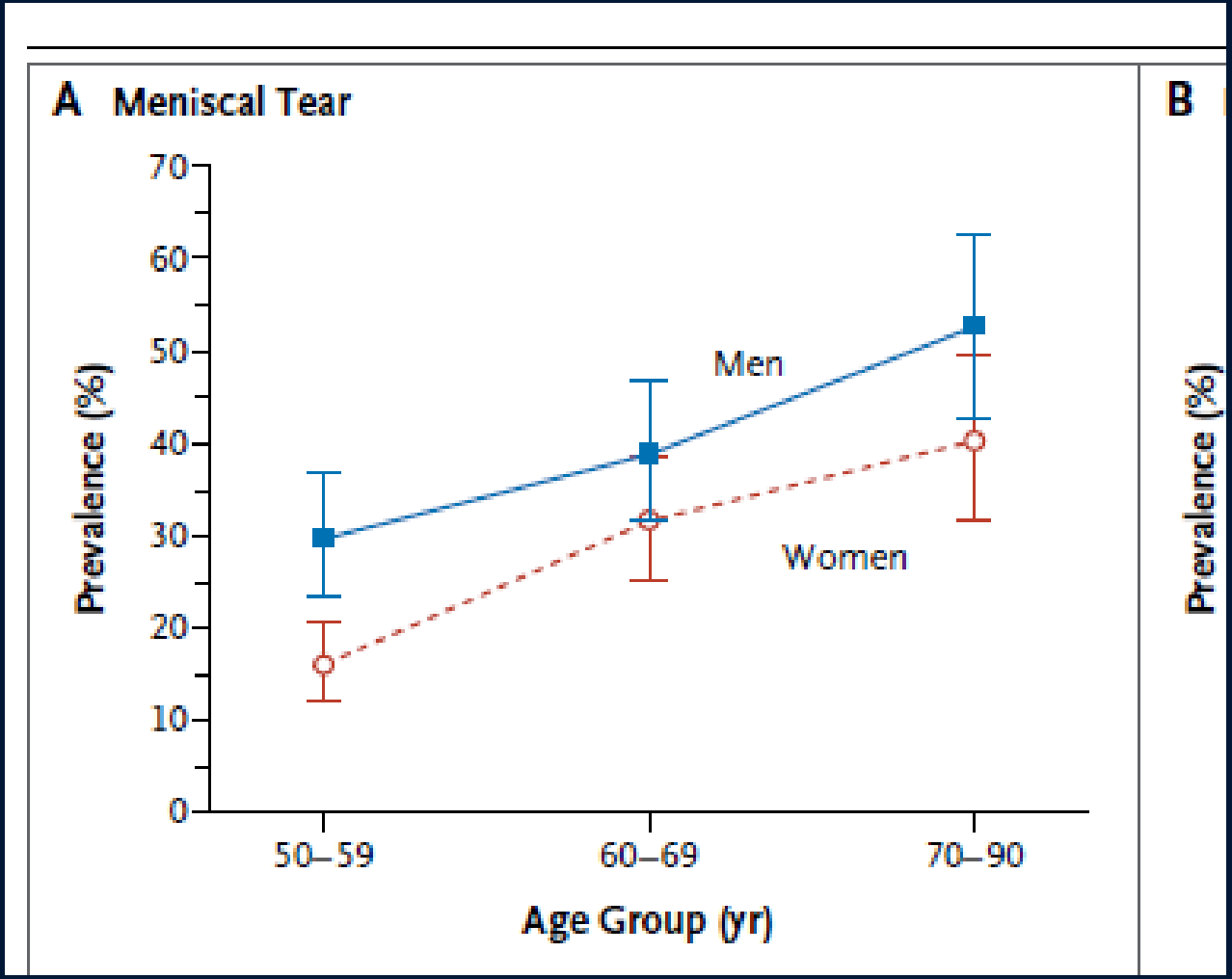
N Engl J Med 2008;359:1108-15.


A Meniscal Tear
B
Prevalence (%)
70
60
50
40
30
20
10
0
Men
Women
50–59
60–69
70–90
Age Group (yr)
Prevalence (%)

| Meniscal Tears | Frequent Knee Symptoms | |
|---|---|---|
| | Yes | No |
| | *no. (%)* | |
| **Radiographic evidence of osteoarthritis** | | |
| One or more meniscal tears | 57 (63) | 46 (60) |
| No meniscal tear | 33 (37) | 31 (40) |
| **No radiographic evidence of osteoarthritis** | | |
| One or more meniscal tears | 41 (32) | 146 (23) |
| No meniscal tear | 86 (68) | 502 (77) |

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# CHOOSING WISELY

**Don’t order an MRI as an initial investigation for suspected rotator cuff tendinopathy.**

“Initial management of rotator cuff tendinopathy includes relative rest, modification of painful activities, and an exercise program guided by a physical therapist or athletic therapist to regain motion and strength. The addition of subacromial cortisone/local anesthetic injections may be helpful. Should conservative management fail to relieve pain and restore function of the shoulder, consider plain radiographs to rule out bony or joint pathology, and ultrasound to assess for rotator cuff and bursal pathology. MRI or MRA (MR arthrogram) should be considered if symptoms don’t resolve with conservative therapy and there is a concern of labral pathology.”

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# CHOOSING WISELY

**Don’t do imaging for lower-back pain unless red flags are present.**

“Red flags include suspected epidural abscess or hematoma presenting with acute pain, but no neurological symptoms (urgent imaging is required); suspected cancer; suspected infection; cauda equina syndrome; severe or progressive neurologic deficit; and suspected compression fracture. In patients with suspected uncomplicated herniated disc or spinal stenosis, imaging is only indicated after at least a six-week trial of conservative management and if symptoms are severe enough that surgery is being considered.”

UBC

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# KELOWNA ORTHOPEDIC SUGGESTIONS

SHOULDER IMAGING:

X-rays initial modality for acute trauma to evaluate for fractures

MRI or US to evaluate acute rotator cuff tears

MRI to evaluate bone tumors or suspected metastasis

MR Arthrogam usually more appropriate following specialist evaluation

MRI not generally helpful in >60 y/o

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# KELOWNA ORTHOPEDIC SUGGESTIONS

KNEE IMAGING:

X-rays are first line modality

Knee MRI, helpful in suspected internal derangement: locking or clicking

MRI not generally helpful in >60 y/o

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# KELOWNA ORTHOPEDIC SUGGESTIONS

HIP IMAGING:

X-rays are first line modality

MR arthrograms for FAI less helpful for >40 years old due to degenerative changes

MR arthrograms should be performed with injection of anesthetic to assess for pain symptomatology changes, dictated in report.

# THANK YOU!

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# ACKNOWLEDGEMENTS

Thanks to:

Dr. Paul Kurkjian at KGH

Robert Steuart at Siemens

VJH Physician Society

Divisions of Family Practice