Choosing MRI Wisely: Part 2

Headaches
Dementia

EFW Radiology Medical Brief

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When to Choose MRI for Headaches or Dementia

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Physicians, policy makers, and elected officials are all acutely aware and concerned about rising healthcare costs. Data from the Organization for Economic Cooperation and Development (OECD) shows that Canada spends just over 11% of its GDP on healthcare. The recent Government of Alberta budget for 2014/15 allocates 45% of all operational spending to healthcare. There is great interest and engagement in proposing solutions to curb costs. One such solution can be broadly described as a critical examination of the decisions physicians make when ordering tests. While no two patient encounters are identical, efforts are being made to support physicians as they strive to provide efficient, high quality, evidence based care to their patients. An example is the Choosing Wisely® initiative of the American Board of Internal Medicine Foundation (ABIM) launched in February 2012. In Canada, the Choosing Wisely Canada campaign has recently been announced and the Canadian Association of Radiologists (CAR) is amongst the first wave of participating societies.

MRI, perhaps because of media spotlight on wait times, receives a great deal of attention. The Canadian Institute for Health Information (CIHI) data indicates that 80% of outpatient MR is for imaging the head, spine and extremities. The purpose of this paper is to provide evidence based (please see bibliography for sources), appropriateness guidelines for MR imaging of these body parts in four common clinical scenarios – headache, dementia, low back pain, and knee pain. The goal is to help the reader maximize the chances that diagnostic MRI studies are ordered when they can improve clinical outcomes for patients.

MR Imaging of the Brain For Headache

Seventy (70%) of the population will experience headache annually; however, the overall yield of an abnormality on neuroimaging for headache, in the absence of an abnormality on neurologic examination ranges from 0.5% to 3%. Despite this low yield, in both new and chronic cases of headache, secondary causes may exist, which if undiagnosed can have devastating consequences. CT and MRI are both useful imaging modalities when investigating headache. The following table provides a summary of current guidelines where MRI is the most appropriate first investigation.
NEW HEADACHE | CHRONIC HEADACHE
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Suspected meningitis/encephalitis | New feature and/or neurologic deficit
Pregnant women | Trigeminal origin
Age > 55 and elevated ESR | Skull base origin (often with cranial nerve findings)
Cancer patient | Orbital/peri-orbital origin (can have cranial nerve findings)
Immune compromised | Associated with cough, exertion, or sexual activity
Papilledema | Positional

**MR Imaging of the Brain for Dementia**

In 2011, some form of dementia affected an estimated 750,000 Canadians, and this number is expected to double by 2031. The most common cause of dementia is Alzheimer disease (AD), with Vascular Dementia, Lewy Body Dementia, and Fronto-temporal Dementia comprising most other causes. Less common causes of dementia include Creutzfeldt-Jakob disease (CJD), Normal Pressure Hydrocephalus (NPH) and movement disorders such as Parkinson’s Disease, Parkinsonian Syndromes and Huntington Disease.

Other than the diagnosis of reversible causes of dementia such as NPH or brain tumors, or subdural collections/hematomas, the greatest value of structural neuroimaging is to increase the specificity of the diagnosis. The Health Quality Ontario report emphasized that in a Family Practice environment, neuroimaging plays a role in making an initial diagnosis with greater certainty, particularly in cases of clinically ambiguous dementia or mixed types of dementia. Because MRI findings in many of the dementias overlap with normal age related structural changes, the interpretation of imaging results in the context of neuropsychological and cognitive testing further exploits the utility of MRI in the evaluation of a patient with suspected dementia. The following indications are considered appropriate use of MR imaging when the diagnosis of dementia needs to be made with reasonable specificity.

Probable or Possible AD, Vascular Dementia, Mixed Vascular Dementia and AD, Frontotemporal dementia, Lewy Body Dementia, CJD, NPH, Parkinson’s or Huntington Dementia.

In conclusion, the application of evidence based, appropriateness guidelines such as these should increase the utility of MRI in a community based, primary care practice and increase the likelihood of MRI positively impacting patient outcomes.
Reference Articles:


v. Canadian Institute for Health Information. Waiting for health care in Canada: what we know and what we don't know. Ottawa: The Institute; 2006. Accessed March 10, 2014


Guidelines: CAR Guidelines; the American College of Radiology, ACR Appropriateness Criteria®.

MRI

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Should you feel your patient would benefit from a MRI at EFW Radiology, and would like to book an appointment please call (403) 541-1200.