Medicolegal Hazards in Spine Imaging

Paul E. Kim, MD
U. Of Southern California Keck School of Medicine

- 1984: Federal cost of medical malpractice = $12.1 to 13.7 billion.
- 1991: $24.9 billion - $18.1 billion in physician service = $6.1 billion in increased hospital costs.
- 2008: Overall annual medical liability system costs, including defensive medicine = est. $55.6 billion
  2.4 percent of total health care spending)

Cases that go to trial:
- 90% not negligent
- $110,000 spent defending the case

Q: Where’s the money?
A: MILC = Malpractice Insurance Litigation Complex

- On average, insurers in California spent 23 percent of collected premiums on claims.
- California’s biggest malpractice insurer, The Doctors Company, spent only 10 percent of the $179 million collected in premiums on claims in 2009.
Malpractice Litigation in the U.S.

- U.S. is one of few countries in which a jury determines whether a physician has committed malpractice
- Germany, United Kingdom, most Canadian provinces – decided by a judge
- Sweden, New Zealand – 'no fault' systems

Malpractice Insurance Rates

- 1957:
  - New York – between $64 and $106
  - California – between $300 and $400
- 2002-2005:
  - Miami – > $200,000 for obstetricians

Medicolegal Hazards in Spine Imaging

1. Legalese basics
   - specific to radiology
2. Navigating the most common hazards
Legalese: What is Malpractice?

1765 – Sir William Blackstone – “neglect or unskillful management of a physician or surgeon” = “mala praxis”

1794 – 1st malpractice case in the U.S. Cross v. Guthrey, 2 Root 90, Conn (1794).

Legalese: What is Malpractice?

Three sources of law in United States:
- Constitutional law
- Statutory law
- Common law
  - *stare decisis* – doctrine of adherence to precedent

Legalese: What is Malpractice?

Four elements:
1. There must be a physician–patient relationship
2. The patient must have sustained an injury
3. The physician must have committed a negligent act (breach of standard of care)
4. The negligent act must have caused the injury to the plaintiff–patient (*proximate cause*)
Legalese: What is Malpractice?

- 1832 – Distinction between “gross negligence” vs. “want of ordinary diligence, care and skill” – the beginning of common law concept of ‘standard of care’
  Connecticut Supreme Court, Landon v Humphrey (1832)

- 1853 – Distinction between “ordinary, reasonable” vs. “desired outcome”
  Pennsylvania Supreme Court, McCandless v McWha (1853)

- 1905 – Distinction between “judgment error” vs. negligence
  New York Supreme Court, Mackenzie v Carman (1905)
Legalese: “ordinary, reasonable” vs. “desired (perfect) outcome”

*Pennsylvania Supreme Court, McCandless v McWha (1853)*

- “The law demands...not extraordinary skill such as belongs only to a few men of rare genius and endowments, but that degree which ordinarily characterizes the profession.”
- “For less than this he is responsible in damages, but if he be held to the measure laid down by the trial court, the implied contract amounts on his part to a warranty of cure for which there is no authority in law.”

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Legalese: “judgment error” vs. negligence

*New York Supreme Court: Mackinzie v Carman (1905)*

- “The law requires a physician to possess the skill and learning which is possessed by the average member of the medical profession... and to apply that skill and learning with ordinary reasonable care.”
- “He is not liable for a mere error in judgment... He does not guarantee a good result.”

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Gross Negligence . . . . . . Standard of care? . . . . . . . . . Perfect Outcome

How does this apply specifically to radiology?
Q: Would you agree with me that the fact that a fracture can be seen in retrospect on a film does not necessarily mean that the radiologist who interpreted the film as normal at the time deviated from the standard of care?
A: I would not agree with that.

Q: So the fact that you can see it in retrospect means that there was a deviation from the standard of care at the time the radiologist called the film normal?
A: In this particular case.

Wisconsin App Court: Dept. of Regulation and Licensing v State of Wisconsin Medical Examining Board, 1997

- The issue of perception

- “The test is not whether [the radiologist] failed to detect what the average radiologist should have detected, but whether [the defendant radiologist] exercised reasonable care.”
- “[The radiologist] used reasonable and ordinary care, and his failures to detect the abnormalities were ‘errors in perception’.”
- “All radiologists miss abnormalities in X rays, but such errors do not, in and of themselves, constitute negligence in treatment.”

Wisconsin App Court: Dept. of Regulation and Licensing v State of Wisconsin Medical Examining Board, 1997

“ordinary,” “reasonable,” “average”

“‘Average physician’ is not synonymous with ‘reasonable physician’. The fallacy in the ‘average’ formulation is that it bears no intrinsic relation to what is reasonable.... Those that have less than...average skill may still be competent and qualified. Half of the physicians of America do not automatically become negligent in practicing medicine...merely because their skill is less than the professional average.”
Straightforward Legalese ≠ Straightforward Cases

• 'When is an error simply an error and when is it malpractice?' L. Berlin Radiology 123:523, 1977

Answer: ????

Categories of ‘Error’

• Perception – 80% of all radiology errors; 70% of all malpractice suits
• Cognition
• Communication*

The malpractice minefield

• Error-genic factors:
  – VOLUME! → rushing, multitasking, fatigue
  – Carelessness
  – Distracting pathology
  – ‘Corner finding’
  – Alliterative errors
  – Comparing prior studies
  – Impaired radiologist
  – Etc., etc., etc.
The malpractice minefield

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Common Hazards in Spine Imaging

- Missed CSI
- Communication failure
- Post-operative spine
- Wrong level
Navigating the Minefield
Hazard #1: Missed C-spine injury

• Missed or delayed diagnosis occurs in 4% to 8% of the cases (70% with AMS)

• Potential lifetime cost of missed CSI with neurological injury ~$1 to 2.2 million

• Average award in 20 cases of missed or delayed diagnosis of CSI was $2.9 million

(Jakimiec et al., Neurosurgery, March 2007)

Clinical Guidelines for obtaining X-rays

• NEXUS* (1998)
  • 34,069 patients: X-rays missed 8 C-sp injuries, 2 deemed ‘clinically significant’, but none resulted in serious consequence → Sensitivity 99.6%

• Canadian Cervical Spine Rule* (2001)
  • 8,924 patients: no missed significant C-sp injuries → Sensitivity 100%

CAVEAT: Excluded ~30% of radiographs as technically inadequate

Current State of Emergency Medicine

“I need a CT and MRI of everything…”
**The Case for CT**

- **Ballitz (2009)**: 78 injuries, 50 'clinically significant'  
  - X-ray: 38 of 50 visible (Sens. 76%)
  - CT: 50/50 seen (Sens. 100%)

- **Mathen (2007)**: 60 injuries, 27 'clinically significant'  
  - X-ray: 27 of 60 visible (Sens. 45%)  
  - CT: 60/60 seen (Sens. 100%)

- **Daffner (2006)**: 245 fx's  
  - CT: 243 of 245 seen (Sens. 99.2%*)

*Horizontal dens fx's*

- **Blackmore et al, Radiology 212: 117–25, 1999**  
  - McCulloch et al, JBJS 27:2388-2394, 2005

**What about MRI?**

- **Tomczy (2008)**: 690 patients had CT + MRI  
  - Ligamentous injury  
    - 164 with CT  
    - 180 with MRI
  - None of 16 missed by CT unstable

- **Schuster (2005)**: 100 patients with Csp injury  
  - 93 patients with persistent severe pain  
    - Negative CT  
    - No additional injuries found with MRI

**Key point:** “Negative CT”
1 week later

“ordinary,” “reasonable,” “average”

- In reality, perception errors are ALWAYS arguable → 70% of radiology lawsuits

Navigating CSI hazard

I. Definitely stable
II. Unstable (or known neuro deficit) → MRI
III. Indeterminate
Instability - Definite

1: widening of interspinous distance ("fanning")
2: loss of parallelism between facet joints
3: sagittal displacement > 3.5mm (static) or > 2mm flex/2mm ext on flex/ext views
4: angular displacement (sagittal plane rotation) > 11° compared with the adjacent interspaces

Instability – Indeterminate

1: equivocal/mild widening of interspinous distance ("fanning")
2: minimal loss of parallelism or minimal widening between facet joints
3: horizontal (sagittal) displacement < 3.5mm
4: angular displacement (sagittal plane rotation) < 11° compared with the adjacent interspaces

MRI for CSI

• WHEN??  Bottom line –

Tomczyz et al. MRI is unnecessary to clear the cervical spine in obtunded/comatose trauma patients: the four-year experience of a level I trauma center. J Trauma. 2008 May;64(5):1258-63.

KEY CAVEAT: ‘… if CT is normal …’
MRI for CSI

- **WHEN??**
- **ACR Appropriateness Criteria**
  - Myelopathy/neurologic deficit
  - Clinically un evaluable > 48 hours **
  - Other imaging (X-ray or CT) findings suggestive of ligamentous injury ***

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'suggestive of' = indeterminate
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Clinical Stable MRI CT Negative

MRI Clinical

Stable Unstable Indeterminate

Clinical, Flex/Ext
Navigating the Minefield
Hazard #2: Failure of Communication

• #2 after failure to diagnose as cause for malpractice action
• ACR survey: 1 in 4 respondents named in lawsuit
• Clinicians failed to acknowledge 36% of abnormal radiology reports – 4% of these lost to f/u

  ➢ Used by either plaintiff or defendant during litigation in 30% of all medical malpractice cases reported in the Physician Insurers Association of America-ACR study [2]

Communication is Settled Law:
Virginia Supreme Court, Williams v Le (2008)

• “The evidence proved without contradiction that the communication problems in this case were begun and put in motion by the radiologist’s failure to make direct contact with the referring physician.
• “An intervening cause does not exempt a defendant from liability if that cause is put into operation by the defendant’s wrongful act or omission.”
Notify the patient???(!)  

- 1974: D.C. federal appeals court  
- 1991: Washington State Fed Court  
- 2004: Arizona State Supreme Court

“A physician [radiologist] has a duty to disclose what he has found and to warn the examinee of any finding that would indicate that the patient is in danger and should seek further medical evaluation and treatment.”  

Betesh v United States of America, 400 F Supp 238 (US Dist DC 1974)

We have little trouble holding that the radiologist owed [the plaintiff] a duty... At a minimum, the radiologist should have notified the [the plaintiff] of the abnormality. This duty is hardly burdensome.”  

Daly v United States of America, 946 F2d, 1467 (9th Cir 1991)

“The radiologist should have anticipated that [the patient] would want to know of the potentially life-threatening condition and that not knowing about it could cause her to forgo timely treatment, and he should have acted with reasonable care in light of that knowledge. … We conclude that public policy is better served by imposing a duty in such circumstances to help prevent future harm.”  

Stanley v McCarver, 92 P3d 849 (Ariz 2004)
Navigating the Minefield
Hazard #3: The Postop Spine

- Along the operative tract, small to moderate size seromas, serosanguinous collections
- Resolve over days, weeks, or months
- Within wide laminectomy defects –
  - Normal fluid collections in the supine recumbent position may exert mild mass effect on the dura
  - Reduces in prone position

Navigating the Minefield
Hazard #4: Wrong Level

- Transitional vertebra - ~13.4% of the population have transitional lumbosacral segment.
  - Illolumbar ligament
- Other anatomic variations – e.g., 11 thoracic segments.
- Report must be clear

Benign and infected postoperative fluid collections often overlap in appearance on CT and MRI, on all sequences, including DWI and contrast-enhanced.

- Clinical findings important when present – unreliable when not present.
- Expanding fluid collection is best sign
- Cautious caveats in reporting
Other Hazards for the radiologist:

1. The negligent clinical colleague
2. The unscrupulous expert witness

*Donald C. Austin v. American Ass’n of Neurological Surgeons, 253 F.3d 987 (7th Cir. 2001)*

_Austin v. AANS*

- 1983 – AANS establishes expert witness review program
- 1998 – AANS suspends D. C. Austin → Austin files suit
- 2001 – 7th Circuit Court found in favor of AANS

HCQIA (Health Care Quality Improvement Act, 1986) – relative immunity to peer review organizations

Unfortunately, not the end of the story
J. Fullerton vs. Florida Medical Assn (2006)

- FMA launches evaluation of Dr. Fullerton’s testimony after complaint of ‘false testimony’
- Florida court rules that expert witness reviews do not constitute the practice of medicine, so HCQIA immunity does not apply.
- Initial decision in favor of FMA
- Florida District Court reversal of lower court decision

Take home

- MILC-ing society of $$$
- Favorable settled law re: perception & judgement errors easy-going for radiologists
- Unfavorable settled law re: communication
- Missed CSI - #1 cause of malpractice action → MRI when stability indeterminate
- Be careful, esp. when busy