Medical Imaging Resource Center (MIRC)

MIRC – What?

• Initiated by the RSNA Radiology Informatics Committee as an
• Open-Source Project for “teaching files and clinical trials at no cost”.
• Works like a “Google” for medical images and teaching files with
• the ability to search multiple imaging libraries and provide
• an authoring tool that makes it easy to create radiology teaching files.
Hardware Considerations

1. Processor 3 GHz Pentium 4
2. 1GB RAM, preferably 2GB or more
3. Network Interface
4. Storage
   - Typical teaching ~ 10 MB
   - 1.000 cases >= 10 GB
   - What do you need ...?

Operating System

1. Linux
2. BSD
3. Mac OS
4. MS Windows
5. Solaris
6. HP-UX
7. AIX
Installation MIRC Server

Software
1. Java Version 1.5 or newer
   (= Java Runtime Environment 5.0)
2. Java Advanced Imaging-Image I/O Tools
   (Same Version as JRE !!!!)
3. Tomcat Version 5.5
4. MIRC Servlet

Concept of MIRC
Basic Query

Advanced Query
Advanced Query

MIRC Query

Select a Monitoring Type:

Search:

Select a query term(s) to:

Document:

Select a query type:

Document Type:

Category:

Level:

Exclude:

Include:

Search:

Create Query Term:

[Image]

Advanced Query

MIRC Query

Select a Monitoring Type:

Search:

Select a query term(s) to:

Document:

Select a query type:

Document Type:

Category:

Level:

Exclude:

Include:

Search:

Create Query Term:

[Image]
Advanced Query

Results (1)
The Teaching File

Abstract

5 year-old female post trauma, unresponsive

Keywords

Epidural hemorrhage, epidural hematoma, CT, 696
Findings

Large extracerebral hemorrhage involving the right frontal and parietal regions. Areas of low attenuation centrally. Associated mass effect on the adjacent brain parenchyma. Adjacent temporal lobe has some areas of low attenuation. Mild/ moderate midline shift. Mild to moderate asymmetrical enlargement of the left lateral ventricle with mild prominence and compression of the right lateral ventricle.

Diagnosis

Epidural hematoma
The Teaching File

Differential
Subdural hematoma

Discussion
Subdural hematomas are most often encountered in the setting of known trauma: approximately 50% of patients present with a lucid interval which is followed by clinical deterioration. The most often encountered site is adjacent to a temporal bone fracture and results from a concussed injury of the middle meningeal artery. These lesions are typically biconvex (as compared to subarachnoid hematomas which are typically concave, although there is some overlap), and a differentiation is made in convexity/concavity non-surgical mechanism of injury. Subdural hematomas do not cross the falx (subarachnoid hematomas can). Exudates can cross the midline superficial to the subdural space, as opposed to subarachnoid.

CT: Subdural hemorrhage is hyperdense in the subdural/superficial setting. If there are areas that are isodense to brain, this indicates acute hemorrhage in a clinical emergency. Chronic subdural bleedings are typically low density, may be concave in shape, and can demonstrate peripheral dense strip enhancement.

MRI: Intensity depends on the age of the blood component. In the acute setting these regions are typically hyperintense on T1 and hyperintense on T2 (depending on the age). Early subacute stage demonstrates high T1, but T2. Late subacute stage is usually hyperintense on both T1 and T2.
**Author: Basic Authoring Tool**

Quick Authoring Tool for DIRKS HSE Storage Service

**Next step:** choose a file:

file: 3DI4M Teaching file

**Next step:** add author and owner information:

Author's name: Self
Author's affiliation: University of Essen
Author's position or email:
Owner's name: Self
Owner's affiliation: University of Essen

Abstract:

**Next step:** add your desired section here:

Findings:

Include another file: [Upload file]

*Close window.*

**Author: Advanced Authoring Tool**

Advanced Authoring Tool

Use this page to update your personal information and to select a XML document template to begin writing a new document.

Author's name: Self
Author's affiliation: University of Essen
Author's phone or email:

Select the template file to use for creating a new XML (example):

- Simple Teaching File Template
- Simple Teaching File Template for Basics Preparation - dark background
- Simple Teaching File Template for Basics Preparation - light background
- Page Insert Document Template
- Minimal Document Template with Special Image Section
- Simple Page Insert Document Template & Basics Preparation

*Close window.*
Author: Advanced Authoring Tool

Title

Show the title of the document as you want it displayed for normal viewing.

By JPR T千克riczki فلا

Authors

Give the name and other information of the document’s authors. Create additional authors by clicking the button at the bottom of the page. To remove an author, remove their name with a single backspace key.

- Author’s name
- Base location
- Author’s affiliation
- Author’s contact information (phone, email, etc.)

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WESTDEUTSCHES HERZENTRUM ESSEN
Klinik für Thorax- und Herzchirurgie, Kardiologie
Klinikum der Universität Essen

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Author: Advanced Authoring Tool

![Drg File Cabinet](image1)

Author: Insert A Quiz

![Insert A Quiz](image2)
Author: Insert A Quiz

- History
- Findings
- Diagnosis
- Differential Diagnosis
- Discussion

Advanced Services: Manage Account
<?xml version="1.0"?>
<MIRCdocument display="mirctf">
<title>Teach the Teacher</title>
<alternative-title>Who teaches the teacher</alternative-title>
<author>
  <name>Bernd Schütze</name>
  <affiliation>Johannes Gutenberg-Universität Mainz, Klinikum</affiliation>
  <contact>schuetze@medizin-informatik.org</contact>
</author>

<abstract>
  <p>Enter basic history for use as an abstract of the case</p>
</abstract>

...</MIRCdocument>
Administration

Administration: File Service
Administration: Teaching Files and Clinical Trials
Export (TCE) Service

TCE Service Configurator

TCE Impact Service

Store AETitle: TCE
Store Port: 2230

Update tce.xml

Administration: Tomcat

User Role Manager
Administration: Tomcat

MIRC Tools: PPT2MIRC

- Powerpoint plug-in (saves a Powerpoint presentation as a MIRCdocument on a MIRC site)
- Tested with:
  - Windows XP,
  - Powerpoint 2003
MIRC Tools: DicomEditor

- A utility program for viewing, editing, and de-identifying DICOM images

MIRC Tools: TCE Export Manager

- Implementation of the IHE Teaching Files and Clinical Trials (TCE) integration profile Export Manager actor
- DICOM transfers in accordance the IHE TCE Profile to produce a MIRCdocument
MIRC Tools: FileSender

→ A utility program for sending files via HTTP or DICOM
→ Its intended use is as a test program for MIRC development
→ It also uploads (zip-) files to MIRC services

More Information at

http://www.rsna.org/mirc/
... or

http://mircwiki.rsna.org

Questions?

thanks for your attention!

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