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Web Review: Special atlases in radiology and imaging

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A few useful special atlases focusing on select topics in radiology and imaging and available at the moment on the Internet are reviewed below.

1. **Chest X-Ray Atlas** by A. J. Chandrasekhar is an illustrative portal sourced from http://www.meddean.luc.edu/lumen/meded/medicine/pulmonar/cxr/atlas/cxratlas_f.htm. There are essentially three sections: *Pathology, Diseases*, and *Signs*. The pathology section has representative images of disease entities of the lung, pleura, chest wall, breast, hilum, nodes, rib, diaphragm, and mediastinal masses, as well bronchograms. The section on radiologic signs includes a huge list of named and well-known signs and is a handy reference tool.
2. **MedPix® Diagnostic Image Atlas** contains illustrative copyrighted material covering a huge list of cases. Available at http://rad.usuhs.edu/medpix/parent.php3?mode=image_atlas, the imaging atlases can be browsed from a pull-down menu, which covers *Organ Location* (e.g., brain, gastrointestinal, etc.), *Sublocation* (e.g., pineal gland, stomach), and *Category of Disease, Diagnosis, or Pathology* (e.g., neoplasm, glioma, ulcer, etc.). Incidentally, MedPix® is authored by J. G. Smirniotopoulos and H. Irvine and is sponsored by the Department of Radiology and Radiological Sciences, USUHS, Bethesda, MD.
3. **Harry's Chest Radiology Atlas** at http://chestatlas.com/ is authored by Harry Shulman. The site has illustrative material on normal chest anatomy and variations from the normal, including common and uncommon entities involving the parenchyma, mediastinum, pleura, diaphragm, chest wall, spine, and aorta. Besides this, there are sections covering anatomy and lung cancer staging as well as an American Thoracic Society (ATS) node map. A useful section on algorithm is on offer at http://chestatlas.com/gallery/Algorithms
4. **Liver Imaging Atlas** is available at http://liveratlas.org/. The Liver Imaging Atlas is created by UW Radiology Web Services, University of Washington, Seattle, WA, and is a collection of common and uncommon liver pathologies. An interactive feature enables different liver pathologies to be categorized either by *imaging features* on liver CT, such as morphology, attenuation, and pattern of contrast enhancement, by *general diagnostic category* (e.g., neoplasm, infection, pediatric) or by an *index*.
5. **Orthopedic Hardware Atlas** at http://www.med.wayne.edu/diagradiology/RSNA2003/Atlas.htm offers illustrative educative material on the hardware devices used in the discipline of orthopedics. There are different sections covering important topics like basic orthopedic hardware, internal and external fixation hardware, screws, plates, pins and wires, intramedullary rods and nails, and joint replacement hardware. Specialized web pages are available, such as "Overview of Joint Replacements and Spinal Hardware." An interesting web page on hardware, arranged anatomically by joint location, is available at http://www.med.wayne.edu/diagradiology/RSNA2003/joint_hardware_overview.htm.
6. **Atlas of Signs in Musculoskeletal Radiology** at http://www.gentili.net/signs/Default.htm is authored by A. Gentili *et al*. from UCLA and WLA VAMC, Los Angeles, CA. It is "an atlas of common and not so common signs used in musculoskeletal radiology" and is reviewed by sign name, pathological diagnosis, or location. Each sign is illustrated with radiographs and diagrams and also has references linked to PubMed. Examples include anterior drawer sign, cortical ring sign, Hill–Sachs sign, rugger-jersey sign, tear drop sign, Terry-Thomas sign, etc.
7. **Musculoskeletal MRI Atlas** at http://www.freitasrad.net is authored by Alex Freitas, MD. There are sections on knee, shoulder, ankle, wrist, elbow, and hip, with

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the focus on two fundamental areas, namely definition of normal anatomy and detection of abnormal fluid or abnormal enhancement.

8. **Coronary Artery Anatomy** at http://www.imaios.com/en/e-Anatomy/Thorax-Abdomen-Pelvis/Coronary-CT is a useful material sourced from the University of Medicine of Montpellier, Canada. It has illustrative material depicting the anatomy of the heart in an interactive manner using cross-sectional imaging. A tool provides access to labeled multidetector CT scan (MDCT) images in four planes. Besides, a test mode allows instant evaluation.
9. **DTI Atlas** at http://www.dtiatlas.org/ offers a variety of features like *Pediatric DTI database*; *Imagilys* – Functional MRI; *Volterys* – database of healthy volunteers and patients for clinical trials; *White Matter Atlas:* diffusion tensor imaging (DTI) atlas of the brain's white matter tracts. The DTI color maps are transparently overlaid on anatomical T1W MRI images in the axial and coronal planes.
10. **Cancer Staging Atlas** at https://www.ajcce-staging.com/staging/view/cancerStage is created by the American Joint Committee on Cancer (AJCC) and Springer Media (www.springer.com), the scientific publisher. Available at this site are useful interactive features like *Staging Forms, Staging Calculator,* and *Staging Guidelines.* The AJCC staging form is available for nearly 60 primary cancer sites. An AJCC e-Staging Tool requires values for T, N, and M, based on which the correct stage is calculated automatically for a given patient. An overview with screenshots highlighting the key features of the AJCC e-Staging Tool is on offer at https://www.ajcce-staging.com/staging/access/demoFwd. The AJCC e-Staging Tool can be integrated with a radiology department electronic health records system and, to facilitate this, an HL7 Info Sheet is also on offer at the above Web page.

End Piece

Breast Imaging Reporting and Data System (BI-RADS®)

Atlas "serves as a comprehensive guide, providing standardized breast imaging terminology, a report organization and assessment structure, and a classification system for mammography, ultrasound, and MRI of the breast." Excerpted text from the **BI-RADS® Atlas** is on offer at http://www.acr.org/secondarymainmenucategories/quality_safety/biradsatlas.aspx.

As an appendix to the **Harrison's Textbook on Principles of Internal Medicine**, radiological imaging findings of common diseases are featured at http://www.meddean.luc.edu/lumen/MedEd/Radio/curriculum/Harrisons/Harrisons_f.htm. Developed and edited by Arcot J. Chandrasekhar *et al*., the material is supported by the Department of Radiology, Stritch School of Medicine, Loyola University, Chicago, IL.

An ultrasonography atlas titled *Atlas d'échographie en Gynécologie–Obstétrique* is available at http://www.aly-abbara.com/echographie/Atlas_echographie/atlas_echographie.html. Authored by Dr. Aly Abbara, the material is in French and has images of many common entities.

Finally, a list of atlases has been covered in the earlier issues of this journal. They include **Anatomy Atlases** at http://www.anatomyatlases.org/, **Free Interactive Atlas of Human Anatomy** at http://www.e-anatomy.org/, **The Whole Brain Atlas** at http://www.med.harvard.edu/AANLIB/home.html, **Interactive Atlas** at http://www.e-anatomy.org/, **Cardiac MRI Anatomical Atlas** at http://www.scmr.org/education/atlas/intro/mrilinks.htm, **Digital Anatomist Project** at http://www9.biostr.washington.edu/da.html, and **Normal and Benign Pathological Findings in 18 FDG-PET and PET/CT: An Interactive Web-Based Image Atlas** at http://www.jpnm.org/petctatlas.html.

Together, this completes the list of online atlases that are useful for students and practicing radiologists alike.