The library without walls: images, medical dictionaries, atlases, medical encyclopedias free on web

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Abstract:

Aim of this article is to present the "reference room" of the Internet, a real library without walls. You will find medical encyclopedias, dictionaries, atlases, e-books, images. You will also learn something useful about the use and reuse of images in a text and in a web site, according to the copyright law.

Sometimes, in preparing meeting speech or lessons you could have to find a brief definition, an image, something else explanatory to support your words. Or you have just a curiosity, or a need of quick information on a medical subject. Yesterday you would have gone to the reference room of a library and consult some heavy volume of an encyclopedia, today you can access a lot of free and qualified material on the web, the real library without walls.

Let's spend a word about the complex copyright question. Finding an image or a text on the Web doesn't mean automatically that it is free to use. Most of the images on the Web are under copyright, unless otherwise stated (e.g. the Creative Commons licenses, which allow the reuse saving the attribution. But it's the author that states them)[1]. Linking to images or texts is always permitted. It is strictly forbidden to copy and paste an image or a text without the explicit permission of the rightful owner.

Medical encyclopedias

A **Medical Encyclopedia** (http://www.nlm.nih.gov/medlineplus/encyclopedia.html) is hosted by Medline Plus, the US National Library of Medicine gateway to trusted health information we talked about on this column. It is an illustrated medical encyclopedia, and it includes over 4,000 articles about diseases, tests, symptoms, injuries, and surgeries. It is available also in Spanish. Easy to access and to navigate, it offers for each term images (free to get and reuse), a short definition, information about causes, symptoms, exams and test, treatments and so on (Fig. 1). Each voice is edited by a specialist whose name and affiliation you can find at the end of the page. It is regularly updated – a guarantee of quality.
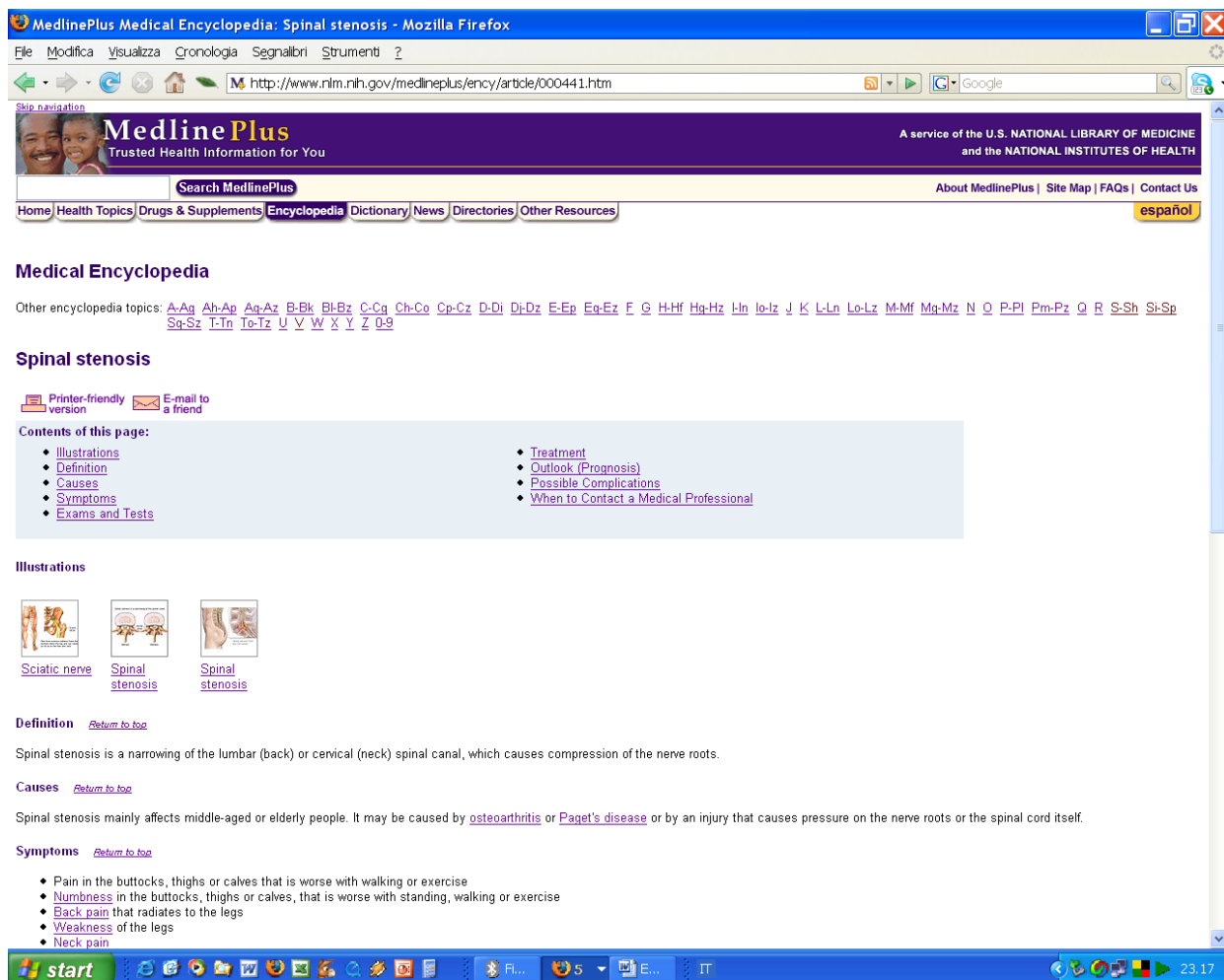
Fig. 1 Medline Plus Medical Encyclopedia for "Spinal stenosis"

The **Medical Encyclopedia Index** (http://www.umm.edu/ency/index/eng_index.htm), edited by the US University of Maryland, is searchable by disease, symptom, injury, surgery, special topics and is available also in Spanish. For some term it offers also images free to get and reuse; for each voice there is a short definition, a description of symptoms, treatment, and prevention.

Please keep in mind that just for a definition you can also use the PubMed **MeSH**, Medical Subject Headings (http://www.ncbi.nlm.nih.gov/sites/entrez?db=mesh), which provides about 24,767 descriptors. And don't forget **Wikipedia** (http://en.wikipedia.org/wiki/Main_Page) whose medical voices are very accurate and always up-to-date and, in the spirit of social networking, verified by thousand of readers in the world.

Medical dictionaries

The **Merriam-Webster Medical Dictionary** is accessible from its own general homepage (http://www.merriam-webster.com/) by flagging "medical" before searching or, with a simpler and more direct interface, from the cited Medline Plus (http://www.nlm.nih.gov/medlineplus/mplusdictionary.html). You can type the word you have to find, or just begin it, followed by an asterisk (to truncate and get all the terms with this root).

The CancerWeb **Online Medical Dictionary** (http://cancerweb.ncl.ac.uk/omd/) contains over 46.000 terms relating to biochemistry, cell biology, chemistry, medicine, molecular biology, physics, plant biology, radiobiology, science and technology. Searchable not only by words but

also by subject area, sometimes it gives, besides the definition, cross-references and links to related resources on the web.

The **Multilingual Glossary of technical and popular medical terms** (http://users.ugent.be/~rvdstich/eugloss/welcome.html) is a project commissioned by the European Commission and developed by the University of Ghent (Belgium). You can find 1830 technical and popular medical terms in eight of the nine official European languages: English, Dutch, French, German, Italian, Spanish, Portuguese and Danish. The system contains:

Lists of technical and popular medical terms: index of all the medical terms, with cross-references between technical and popular terms (one list for each language).

Glossaries of technical and popular medical terms: notes and comments from translators and users for each of the 1830 terms in the selected language.

Multilingual lemma collection: this list contains 1830 pages, one for each of the 1830 concepts in this system. On each page all the technical and popular terms from the all languages are brought together.

Dictionary: this list contains a short description (in English) of each term.

You can approach this system by "Speed Search", just typing a word, or by browsing the alphabetical list once selected a language, or by accessing the multilingual "Lemma collection" for the translation.

For general purposes, **Wordreference.com** (http://wordreference.com/) is a service with free online dictionaries (English, French, Italian, Spanish, and Portuguese) for translations and cross-search. Or each voice a "listening button" is provided with English or American correct pronunciation.

The University of San Diego (California, USA) provides a list of **Dictionaries and thesauri** (http://tinyurl.com/3qdbkf) for general and specialist purposes, including acronyms and symbols.

Atlases, e-books, open courses

The **Visible Human Project** (http://www.nlm.nih.gov/research/visible/visible_human.html) is the project of the US National Institutes of Health aimed at the creation of complete, anatomically detailed, three-dimensional representations of the normal male and female human bodies. From the homepage lot of material is available for free (on the contrary, the files of the whole images are for charge).

A source of quality for atlases is the Israeli web site **Golden Hour** (http://www.goldenhour.co.il/on_line_atlases.html), that lists several anatomy atlases (among which the famous "Gray"), but also a useful "The Muscle dissector", and an "Atlas of brain". A rich section of "Radiology files" is also presented.

Musculoskeletal Radiology (http://www.rad.washington.edu/academics/academic-sections/msk) is the subject of a medical gateway edited by the University of Washington (USA) School of Medicine. This is a very rich site, with a muscle atlas and a lot of teaching material for diagnostic radiology.

MRI and radiology teaching files (http://www.mritutor.org/mriteach/index.html), edited by professor Ballinger of the University of Florida, presents a lot of images divided by body location (spine, musculoskeletal, brain…), searchable by diagnosis or unknown cases. All the images are under copyright.

There are lots of sites providing free access to e-books:

- **Bookshelf** – US National Library of Medicine is accessible from the PubMed homepage by the black navigation toolbar on the upper side of the screen – Books-, or directly at http://www.ncbi.nlm.nih.gov/sites/entrez?db=books&itool=toolbar. The interface is the

same and well known of PubMed. You can type a word in the search box and the system gives back all the references it found in all the chapters of the available books (about one hundred). From PubMed itself, in many abstracts, there are link on the upper right to "Related articles" and "Books" if the case.

- **Virtual books** - Golden Hour (http://www.goldenhour.co.il/virtual_books.html): a list of about 40 texts, including the Merck manuals and a useful Textbook of Physical Medicine and Rehabilitation (http://www.emedicine.com/pmr/index.shtml).
- **e-Medicine (**http://www.emedicine.com/**)** is a comprehensive site that offers e-books divided into specialities and also a useful link to free accredited CME courses.
- **Free books 4 Doctors** (http://www.freebooks4doctors.com/index.htm) provides access to about 630 e-books, accessible by title or by speciality (search is not allowed, only browsing).
- **Books online –** National Academies Press (http://www.nap.edu/topics.php?browse=1) gives access to more than 3700 free books in lots of disciplines, among which Health and Medicine or Biology and Life Sciences.

The last initiative to report is the Boston Massachusetts Institute of Technology (MIT) OpenCourseWare (http://ocw.mit.edu/OcwWeb/web/courses/courses/index.htm): it is a web-based publication of virtually all MIT course content. Some of the courses have also video content. Sections to be seen: Biology, Biological Engineering, Brian and cognitive sciences, Health and technologies.

Medical images

If you need a medical image – beware of the copyright law, not all of the sites listed below are free – you can have a look at:

- **HONMedia** (http://www.hon.ch/HONmedia/) is a repository of over 6.800 medical images and videos, pertaining to 1.700 topics and themes, edited by the Health on the Net Foundation. Search by keyword or by steps (category, subcategory, voice, like in Fig. 2: Diseases – Musculoskeletal diseases – Osteoarthropathy, Primary Hypertrophic). Please notice that under each image there is the indication of the copyright owner, to whom requests of reuse must be addressed.
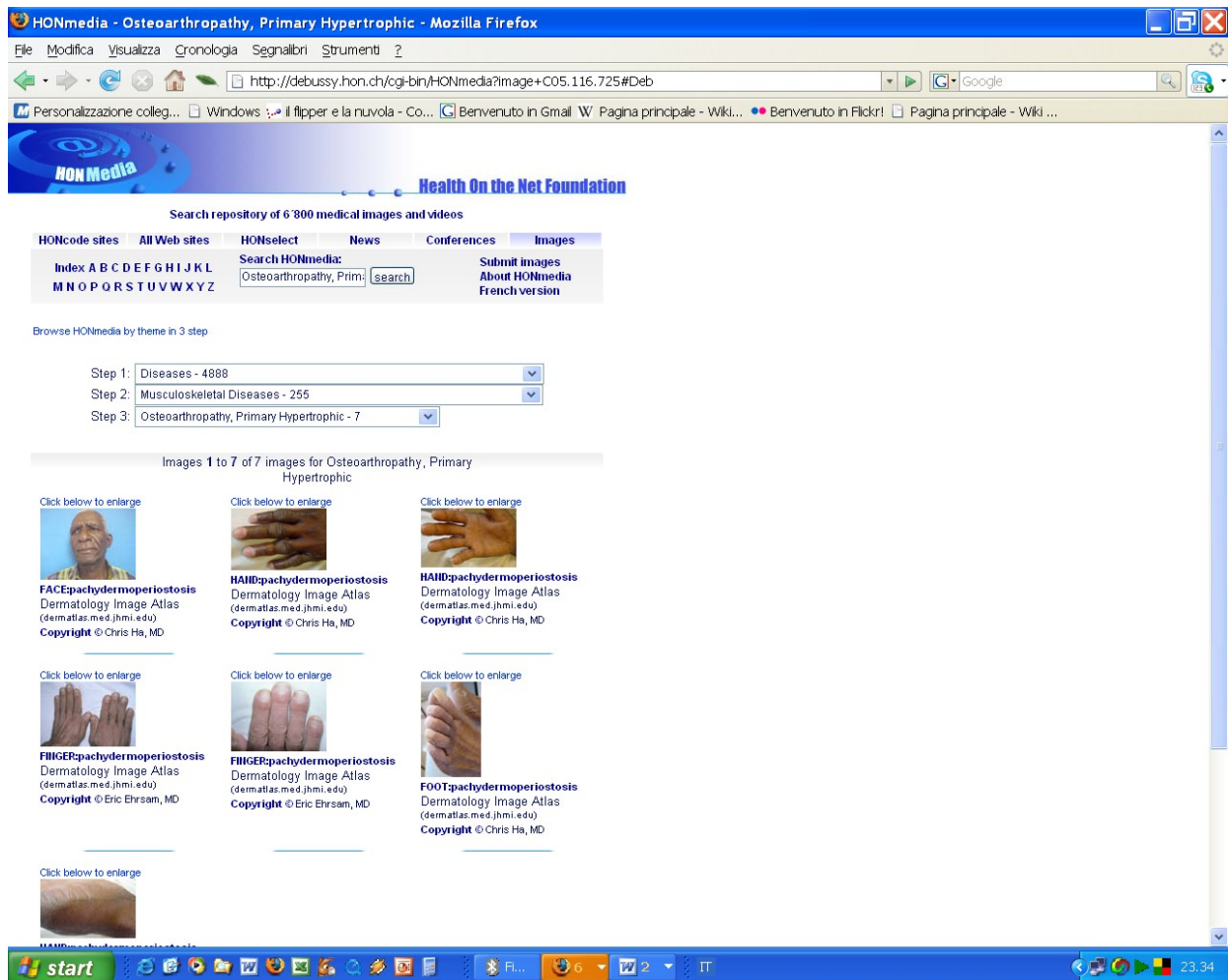
Fig. 2: HONMedia Osteoarthropathy images

- **Medical Images – TRIP** Turning Research into Practice, the EBM search engine (http://www.tripdatabase.com/index.html?categoryid=7) has a section dedicated to the images. Searchable by keyword.
- **Medical Images** edited by the Swedish Karolinska Institutet (http://www.mic.ki.se/MEDIMAGES.html) is a fundamental index with links to hundreds of websites in several disciplines that provide access to medical images. Only browsing admitted. A disclaimer about copyright can be read on the top of the page.
- **Martindale's Health Science Guide** (http://www.martindalecenter.com/HSGuide.html) offers more than 4.800 images and about 1.000 videos in its disciplinary sections. In some cases are listed also atlases and textbooks.
- **Google images** (http://images.google.it/) offers a good response for medical images. From the Advanced search page it is possible to limit e.g. for domain (.edu, .org…) to obtain quality material.

1. See Creative Commons at http://creativecommons.org/.