Electronic Three-dimensional Atlas of Acupuncture

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There are numerous print materials on acupuncture containing illustrations of the human body with the channels and acupoints. These images are static with predefined and limited views. Three-dimensional (3D) relationships among the channels, acupoints, and the body are difficult to understand. The illustrations and their textual descriptions are usually disconnected. To overcome these limitations, we have developed an interactive, bilingual, 3D atlas of acupuncture with multi-media capabilities. This atlas is derived from axial cryosections of the Visible Human Data (VHD). It shows the channels and acupoints in 3D with respect to the body surface. The atlas also provides several unique features including acupoint labeling, acupoint description, and bilingual support.

Our atlas of acupuncture contains twelve body channels and about 400 acupoints. The body channels are: lung, pericardium, heart, large intestine, sanjiao, small intestine, stomach, gall bladder, urinary bladder, spleen, liver, and kidney. The channels are spatially registered with the VHD. The positions of the acupoints are localized on axial images of the VHD based on anatomical and acupuncture landmarks. All 3D acupoints are mapped into the surface of the VHD body. The acupoints are arranged according to the corresponding channels and labeled with English and Chinese names.
A multi-media, user-friendly application is developed with surface rendered images pre-calculated from numerous views containing the VHD body along with the channels overlaid on it. The acupoints are labeled with English and Chinese names as well as some description. In addition, for each acupoint its Chinese pronunciation is recorded and can be played back by the user.

The atlas provides an easy and intuitive way of exploring its multi-media content. The user starts exploration with selecting a channel of interest from the list of 12 body channels and gets the list of the acupoints in this channel. The selected channel is displayed in 3D overlaid on the VHD body. The user can rotate the body to explore the channel from different views. The acupoints of the selected and displayed channel are labeled with their names. The user has two ways of exploring them either by clicking on any of them in the 3D image or by selecting its name from the acupoint index. The name of the selected acupoint is displayed in English and Chinese. Moreover, the user can display the description of the explored acupoint in terms of its location, way of puncturing, and indication. Finally, the user may also listen to a Chinese pronunciation of its name.

This atlas overcomes limitations of the existing print acupuncture atlases as well as provides several new features including 3D channel display, 3D channel-body relationship, easy navigation, multi-media support, and fully labeled acupoints. All these features make the atlas an ideal tool for a layman to learn acupuncture.

Our atlas has still several shortcomings in terms of its contents and functionality. It contains only 12 regular meridians, while 8 extra meridians, 12 divergent meridians, and 15 collaterals are not included. The description of the acupoints is quite limited. The 3D relationship of the meridians to the internal structures is missing.