Virtual bronchoscopy using Horos

Sir,

Previous studies have reported the use of virtual bronchoscopy involving OsiriX™ (Pixmeo, Geneva, Switzerland), an open-source DICOM viewer for Mac OS, and its application for transbronchial biopsy and surgery.[1,2] Although the 32-bit version of OsiriX was free,

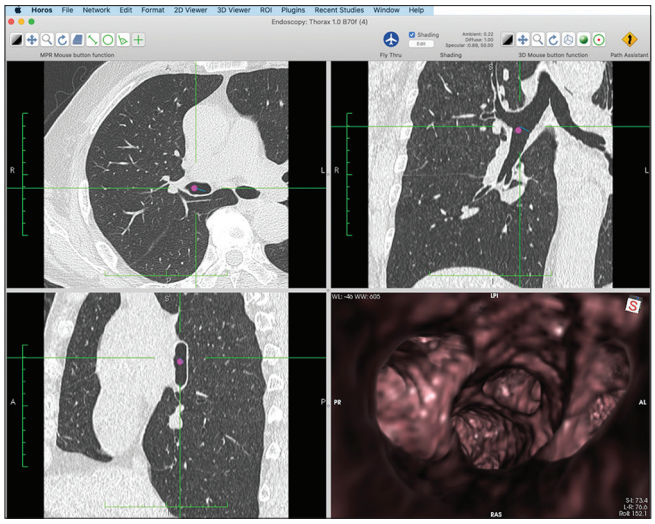

Figure 1: Reconstructing virtual bronchoscopic images by Horos. Axial, coronal, and sagittal multiplanar reconstruction computed tomographic images and the virtual bronchoscopic image are shown on a screen. As with OsiriX, we can navigate within the virtual bronchoscopic tree using the "three-dimensional mouse button" function and reconstruct virtual bronchoscopic images and movies while referring to the multiplanar reconstruction computed tomographic images

OsiriX recently ceased to be an open-source software. OsiriX Lite, the complete demo version, is still free, but it has various functional limitations.

Horos™ (Horos Project, Geneva, Switzerland) is a free DICOM viewer for Mac OS X based on OsiriX 5.8, the latest open-source version of OsiriX. Like OsiriX, Horos can be used to perform three-dimensional (3D) reconstruction of computed tomography (CT) images. Recently, Horos has been used to analyze both 2D and 3D CT images.[3,4]

We applied Horos to virtual bronchoscopy. Horos version 4.0 was installed on a Mac Mini 2018 with OS 10.15 Catalina software (Apple, Cupertino, CA). DICOM data from patients' chest CTs derived using lung window without contrast were copied to a computer. The chest CT images were automatically converted to a bronchoscopic view using the "3D endoscope" function in Horos [Figure 1]. We could move freely within the 3D virtual bronchial tree using the mouse buttons. We could export the virtual bronchoscopic data as a video using the "fly-thru" function [Video 1]. The virtual bronchoscopy procedure using Horos is almost same as that using OsiriX.

The latest version of OsiriX Lite has several limitations. It does not currently support importing data from compact disc or dealing with CT series larger than 500 images. Despite being free software, Horos supports compact disc data and has no limitations regarding dataset size. When we reconstruct 3D CT images, a thinner slice pitch is desirable. Compared to OsiriX Lite, Horos is suitable for 3D CT images, including those used in virtual bronchoscopy. Brühschwein *et al*. performed a comparison of seven free DICOM viewers[5] and reported that OsiriX Lite and Horos had the greatest number of important features. Since OsiriX Lite currently has several limitations, we think that Horos is the best free DICOM viewer, especially for the reconstruction of 3D CT images, including those used in virtual bronchoscopy.

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Conflicts of interest

There are no conflicts of interest.

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