Quality of digital x-ray images

SIR, – I would like to comment on the increasing number of x-ray digital images that are being submitted to me and others for second opinion from general practice. These frequently seem to demonstrate problems with interpretation. The initial impression is that the quality of many digital images being submitted is lower than would be expected on conventional images on x-ray film. The supposed option of improving the digital image by enlargement, cropping or altering the contrast and/or brightness has a surprisingly limited benefit. Good radiographic technique using accurate positioning and exposure remains essential. Any basic image can only withstand a modest amount of alteration as the amount of information stored on the media at exposure is fixed and more information may not be gained by image manipulation. This is a quite different situation from the accepted manipulations of digital images used in graphics for photographs or magazines, where the information itself can be altered as desired, such as airbrushing away blemishes from models’ faces or changing body part outline.

In both digital and conventional x-ray images, as accurate a representation as possible of the patient anatomy/pathology is required for certainty in diagnosis. The consequence of a poor quality image is that insufficient detail may be available for an accurate diagnosis to be made. In particular, fine bone detail may be lost at bone edges or joint margins and bone density changes can be created or lost at will, so that the diagnosis may be either missed or inaccurate, with potentially serious consequences in terms of patient management and possible consequent negligence claims.

Care must also be taken when accurate measurements become necessary for selection of orthopaedic implants or measurements of osteophytes in control schemes, unless some marker of known dimensions is present on the digital image.

When more than one digitally generated view is submitted, each image has to be generated separately on to the computer screen and examined individually, for when a number of images are displayed on the same screen they are inevitably small and individually more pixellated and therefore more difficult to see as well as being reduced in size compared with the original patient. Interpretation of multiple images takes considerably more time because it takes much longer to load and change computer images compared with removing a set of conventional films from an envelope and putting them on a film screen. Direct comparison of a number of views on conventional films, which can be displayed simultaneously, readily positioned and moved about on a light box, examined with spot bright light or by reflected or transmitted light is much more difficult with digital images without either considerable amounts of computer equipment or prolonged time and effort.

Digitally produced photographic prints may alleviate some of these problems but can be expensive when costs of printer, paper and ink, and so on, are counted and are time-consuming to produce.

I accept that the absence of wet facilities and darkroom, easy media storage and transmission around a practice to any computer may seem to be of benefit, but I suggest that veterinary surgeons evaluate possible digital systems before purchase with great care. It is likely that expensive systems in large hospitals pro-
duce very good images but cheaper systems may actually result in poorer radiographic work.

D. G. Clayton Jones, Clayton Jones Referrals, Highlands Surgery, Ashford Road, Tenterden, Kent TN30 6LX
Quality of digital x-ray images

D. G. Clayton Jones

Veterinary Record 2006 158: 31-32
doi: 10.1136/vr.158.1.31-a

Updated information and services can be found at:
http://veterinaryrecord.bmj.com/content/158/1/31.2

Email alerting service

These include:
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/