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To the Editor:

Uosyte and colleagues' recent paper on computed tomography of canine and feline nasal turbinates¹ concluded that 'that the conspicuity of canine and feline nasal turbinates [in CT images] is decreased by fluid' and the authors speculated that if a 'denser structure is very thin and is surrounded by much thicker lower density objects on both sides... soft tissue effacement of the denser structure occurs.' Unfortunately, this conclusion is inaccurate and the speculation is unnecessary.

In common usage, the term 'turbinates' encompasses the osseous nasal conchae and the nasal epithelium² and, when considering CT of the nose, it is important to distinguish these structures because their x-ray attenuation is markedly different and their appearance in CT images depends on the window/level, and can vary independently depending on nasal pathology.

Although the appearance of nasal turbinates is affected by various CT technical factors, which they studied in detail, Uosyte and colleagues viewed all their CT images using a particularly wide window (4000HU) and high level (700HU), which minimizes visibility of the conchae. They did this despite acknowledging in the first paragraph of their paper that 'nasal turbinate destruction is often easily visible when using the appropriate window settings'.

Appropriate CT window settings for examining a normal canine nasal cavity are wide (with either low or high center) and primarily depict the nasal epithelium/air interface (Figure 1A & 1B). The conchae are only faintly visible in CT images obtained with a wide window because they are so thin. When intranasal air is replaced by exudate or tissue, the nasal epithelium/air interface is obliterated, but intact conchae will remain faintly visible (Figure 1C). Several years ago, we performed (unpublished) studies using canine cadaver heads and exudate substitute (custard, 60HU), which demonstrated that although conchae are inconspicuous when using a wide window, the conchae are visualized clearly when using a narrow window (Figure 1D). Like all bones, the conchae appear larger when using a narrow window because of the edge spread function.³

Hence, when attempting to examine the conchae in a patient with nasal disease, a soft tissue window can be more useful than a lung or bone window. Whereas the normal soft tissue-air interface at the surface of the nasal epithelium will be obliterated by intranasal exudate, this cannot also obliterate the osseous conchae without re-writing the laws of physics.

Yours sincerely,

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Legend

Figure 1. Details of transverse CT images of a canine cadaver head through the maxilloturbinates. All images were obtained with a high frequency reconstruction kernel, 1.5mm slice thickness, 12cm field of view and 512x512 matrix (pixel size 0.23mm). A) normal, lung window (1500/-500); B) normal, bone window (4000/700); C) nasal cavity filled with custard, bone window (4000/700); D) nasal cavity filled with custard, soft tissue window (350/50). The conchae are barely visible when the nasal cavity contains air. After replacing the air with the custard, the conchae are faintly visible when using a wide window (C), but are clearly visible as rows of dense foci when using a soft tissue window (D). Bar = 2mm.

