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P2.6: Detection of gastrointestinal foreign bodies in pets using single grid-based dark-field X-ray imaging

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Gastrointestinal (GI) foreign bodies occur when pets consume items that are nondigestible and will not readily pass through their stomach or intestines. Traditional radiography has been widely used to detect GI foreign bodies in pets. However, particularly, detecting low-density GI foreign bodies such as wood, plastic, clothing, and sticks is often difficult in conventional absorption-based radiography. In this study, to overcome this difficulty, we propose a novel imaging method, the so-called single grid-based dark-field X-ray imaging (SG-DFXI), for more clearly detecting low-density foreign bodies in pets. SG-DFXI is a single-exposure, non-interferometric imaging method for retrieval of absorption and dark-field images using a conventional X-ray grid. To demonstrate the efficacy of the proposed method, an experiment was conducted with a mouse phantom containing a piece of wooden chopstick. The preliminary results of an absorption and a dark-field images of a mouse phantom that contained a piece of wooden chopstick. According to our preliminary results, the proposed approach significantly improved the ability to detect low-density foreign bodies in pets.

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