Review of: "Dose Reduction in Medical Radiography: Advancing Veterinary Diagnostic Solutions"

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Potential competing interests: No potential competing interests to declare.

General Comments:

The study "Dose Reduction in Medical Radiography: Advancing Veterinary Diagnostic Solutions" by Kocaova et al. is well-structured and presents significant findings on the use of Linear Array Detectors (LAD) to reduce entrance skin dose (ESD) in veterinary radiography. The paper is thorough in its approach, detailing the methodology, results, and implications effectively. However, there are some areas that require clarification and additional information to strengthen the study.

Major Issues

INTRODUCTION (Page 2 - 3)

Page 2, Paragraph 2:

- The indirect effects of ionizing radiation are not well explained. Consider providing more detail on how radiation interacts with water molecules to produce free radicals, which in turn cause damage to cellular components such as DNA.
- The mechanism by which radiation ionizes DNA in direct effects needs further elaboration. It would be beneficial to explain how ionizing radiation causes single or double-strand breaks in DNA, leading to mutations or cell death.
- The statement that the interaction of ionizing radiation with DNA is always a risk is too general. It is important to clarify that while this interaction poses a risk to normal cells, it can be beneficial when the DNA is that of cancerous cells, as the radiation can help to destroy cancer cells.

Page 2, Paragraph 4:

- It was noted that the abbreviation "Pb" was used, without being previously defined. In scientific writing, it is essential to define all abbreviations at their first occurrence to ensure clarity and consistency throughout the document.
- The term "direct photons" needs to be clarified. It is important to define what is meant by "direct photons" in this context.
- The sentence "That is why grids have source to image distance (SID)" is not clear. If it can be reframed.
- This statement "Using an anti-scatter grid can increase the patient’s entrance dose because the primary beam may require an increase in intensity to compensate for the absorption of X-rays by the grid" as used in the paragraph should

be referenced to substantiate the claim about the impact of using an anti-scatter grid on the patient's entrance dose

Page 3:

- The figures should be individually numbered and titled to enhance clarity and reference within the text. This approach ensures that each figure can be easily identified and discussed, improving the overall readability and professionalism of the article.

MATERIALS AND METHODS (Pages 4 – 7)

- The figures on page 4 should be individually numbered and titled to enhance clarity and reference within the text.
- The procedural steps described are somewhat vague and lack detailed information on specific settings, calibration procedures, and controls used during the experiments.

Recommendation: Provide a more thorough description of the procedures, including specific settings (e.g., exposure times, radiation doses), calibration steps, and the use of controls to ensure experimental validity and reliability.

- The methodology section does not begin with a clear statement of the specific objectives being tested. This omission can make it challenging for readers to understand the purpose and direction of the research.

Recommendation: Introduce the methodology section with a clear statement of the research objectives to provide context and focus for the subsequent procedures.

Page 6:

- Each figure should have a distinct and descriptive title. These titles should clearly and concisely describe what each figure represents.

RESULTS AND DISCUSSION (Pages 7 – 10)

- The results and discussion are combined, which can lead to confusion for readers trying to distinguish between the actual findings and their interpretation.

Recommendation: Separate the results from the discussion. Present the findings in a clear, factual manner in the "Results" section, and then interpret and contextualize these findings in the "Discussion" section.

- The beginning of the results and discussion section includes content that is more appropriate for the methodology section.

Recommendation: Omit the methodological details from the results and discussion section. Ensure that all procedural details are confined to the methodology section to maintain clarity and focus.

- The titles of the tables are not detailed enough, leading to a lack of clarity regarding the data presented.

Recommendation: Provide detailed titles for each table. The titles should clearly describe the content and purpose of the

tables, making them self-explanatory.

- There is a grammatical error in the first sentence of the last paragraph on page 8. The sentence reads: "Image related factors like grayscale or diagnostic quality were not taken into account this water phantom measurements."

Recommendation: Correct the grammatical error to improve readability.

- The graphs on page 9 are not individually titled, which can make it difficult to understand their specific relevance and content.

Recommendation: Each graph should be titled separately, providing a clear and concise description of what the graph represents. This enhances the reader's ability to quickly grasp the information presented.

Page 9, paragraph 4:

- The opportunity that the LAD detector brings is mentioned but not elaborated upon. The sentence reads: "In addition to the dose reduction, magnification with the LAD detector brings a new opportunity."

Recommendation: Expand on the opportunity the LAD detector offers. Provide specific details and examples to illustrate its benefits and potential impact.

- There is a grammatical error in the last sentence of the first paragraph on page 10. The sentence reads: "The magnification capability of LAD is a phenomenon may require further researches in direct radiography and mammography."

Recommendation: Correct the grammatical error to improve the clarity and professionalism of the writing. The revised sentence should be: "The magnification capability of LAD is a phenomenon that may require further research in direct radiography and mammography."

- Some interpretations of the data are not clearly linked to the results presented.

Recommendation: Ensure that all interpretations in the discussion are directly supported by the data presented in the results section. Provide clear references to the figures and tables that support each point.

Minor issues

- Transitions between sections are weak or abrupt, making the manuscript feel disjointed.

Recommendation: Improve transitions by using linking sentences or phrases that clearly indicate the relationship between sections. For instance, at the end of a section, summarize the main points and briefly introduce the next topic. Smooth transitions help maintain the reader's engagement and ensure a logical flow of information.

- There are several typographical errors throughout the manuscript, including misspellings, incorrect punctuation, and formatting inconsistencies.

Recommendation: Conduct a thorough proofread of the manuscript to identify and correct typographical errors. It may also be helpful to use a spell-check tool and grammar-check software to catch mistakes. The use of personal pronouns such as "we" and "our" is not appropriate for scientific writing.

Recommendation: Minimize the use of personal pronouns to maintain an objective and formal tone. Rewrite the sentences to eliminate personal references.

Recommendation

After the necessary changes are made in the manuscript, it is recommendable for publication.