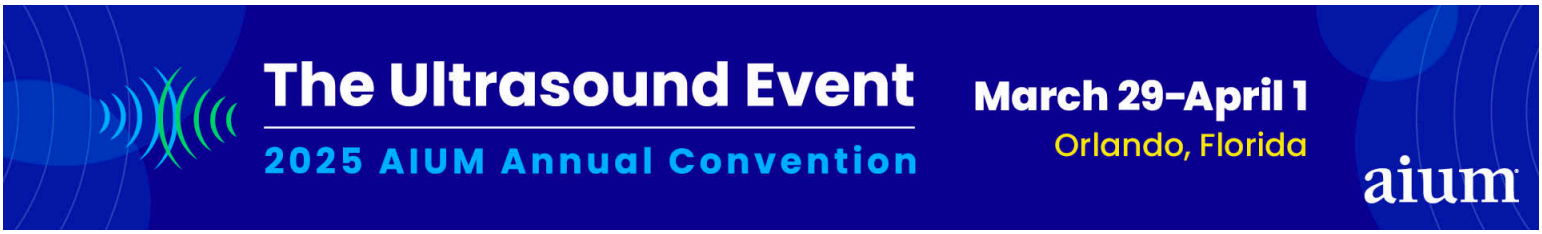

Abstract Title: Radiation-Induced Deep Vein Thrombosis: Exploring Vascular Complications from Radiation Exposure in Diagnostic Imaging

ABSTRACT PREVIEW: RADIATION-INDUCED DEEP VEIN THROMBOSIS: EXPLORING VASCULAR COMPLICATIONS FROM RADIATION EXPOSURE IN DIAGNOSTIC IMAGING

Radiation-Induced Deep Vein Thrombosis: Exploring Vascular Complications from Radiation Exposure in Diagnostic Imaging

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Position:
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Organization:
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Role:

Presenter

Are you a member of the AIUM?
Yes
162853

Disclosure Status: Complete
Disclosure: Nothing to Disclose
Signed: *Karen Nussbaumer* (09/23/2024, 10:31 PM)

Abstract Details

Topic

1st choice: Ultrasound in Medical Education
2nd choice: Ultrasound in Global Health

Abstract Sub-Topic:

Assessment

If Other was selected as a sub-topic, please select Other again below and enter alternate subtopic in the text field that displays.

Poster Alternative

- Yes

ePoster Alternative

- Yes

Objectives

To propose and explore the theory that deep vein thrombosis (DVT) may be induced by exposure to ionizing radiation, particularly from diagnostic medical imaging and cancer treatments. The objective is to investigate the potential mechanisms by which radiation could lead to vascular damage and altered coagulation, thereby contributing to the development of DVT.

Methods

The study involves a comprehensive review of existing literature on the effects of ionizing radiation on blood vessels and coagulation pathways. Mechanisms such as radiation-induced endothelial damage, inflammation, and changes in blood viscosity are examined to understand how radiation exposure may create a pro-thrombotic environment. Notably, Ann Kennedy's work on disseminated intravascular coagulation (DIC) in a porcine model demonstrates that radiation can cause widespread activation of the clotting cascade and endothelial damage. Epidemiological data, case studies, and clinical observations are reviewed to identify patterns of DVT occurrence in patients exposed to diagnostic and therapeutic radiation. A proposed future study would involve a comparative analysis of DVT incidence between cancer patients frequently exposed to diagnostic imaging radiation (such as CT) and non-cancer patients who are not, using ultrasound as a primary diagnostic tool.

Results

Although a direct comparative analysis has not yet been conducted, existing evidence suggests that radiation exposure, particularly from diagnostic imaging like CT scans, can cause endothelial damage and dysfunction, leading to a cascade of inflammatory responses that promote thrombosis. Studies show that radiation exposure can induce coagulation abnormalities such as disseminated intravascular coagulation (DIC), which may contribute to thrombotic events like DVT. It is likely that patients diagnosed and monitored with ultrasound—a non-radiative imaging modality—may have a lower incidence of DVT compared to those exposed to CT or other radiative methods. This highlights the need for further research into the potential vascular risks associated with radiation exposure and the benefits of alternative, non-radiative diagnostic options.

Conclusions

This study presents a novel hypothesis that ionizing radiation from diagnostic imaging and cancer treatments may be a contributing factor in the development of DVT, challenging the conventional understanding of DVT etiology. The potential for radiation-induced vascular damage and coagulation changes warrants further investigation. Future research should focus on conducting a comparative study between cancer patients (who frequently receive radiation) and non-cancer patients, utilizing ultrasound to monitor DVT incidence. Such a study could provide more definitive evidence on whether patients not exposed to radiation or those who use ultrasound instead of CT scans have a lower risk of DVT.

Abstract Overview

This presentation introduces a new theory that challenges the traditional understanding of deep vein thrombosis (DVT) causes. It explores the potential role of ionizing radiation—common in diagnostic medical imaging like CT scans and cancer therapy—as a contributing factor in the development of DVT. Attendees will gain insights into the mechanisms by which radiation may damage blood vessels and alter coagulation, promoting thrombosis. The proposed future study, comparing DVT incidence between cancer patients frequently exposed to radiation and non-cancer patients using ultrasound, aims to provide further evidence on the impact of radiation exposure on vascular health. If you are interested in understanding the broader implications of radiation exposure and exploring new preventive strategies like using ultrasound for diagnosis, this presentation is a must-attend. Join us to learn more about this innovative perspective and its potential to reshape clinical practices.

Awards Submissions

Should this abstract be considered for the New investigators Award?
Yes

Should this abstract be considered for the Great 8 Award?
Yes

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Presented abstracts and final ePosters from the event will appear as part of the Proceedings, a supplement of the Journal of Ultrasound in Medicine, following the meeting.
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