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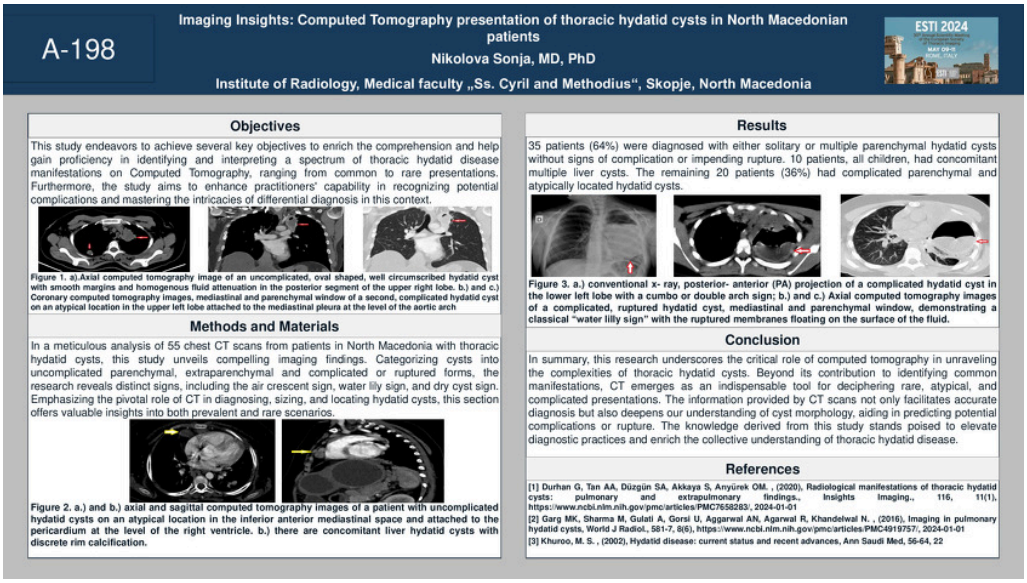
Imaging Insights: Computed Tomography presentation of thoracic hydatid cysts in North Macedonian patients

PREVIEW



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Imaging Insights: Computed Tomography presentation of thoracic hydatid cysts in North Macedonian patients

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Objectives

This study endeavors to achieve several key objectives to enrich the comprehension and help gain proficiency in identifying and interpreting a spectrum of thoracic hydatid disease manifestations on Computed Tomography, ranging from common to rare presentations. Furthermore, the study aims to enhance practitioners' capability in recognizing potential complications and mastering the intricacies of differential diagnosis in this context.

Figure 1. a).Axial computed tomography image of an uncomplicated, oval shaped, well circumscribed hydatid cyst with smooth margins and homogenous fluid attenuation in the posterior segment of the upper right lobe. b.) and c.) Coronary computed tomography images, mediastinal and parenchymal window of a second, complicated hydatid cyst on an atypical location in the upper left lobe attached to the mediastinal pleura at the level of the aortic arch

Methods and Materials

In a meticulous analysis of 55 chest CT scans from patients in North Macedonia with thoracic hydatid cysts, this study unveils compelling imaging findings. Categorizing cysts into uncomplicated parenchymal, extraparenchymal and complicated or ruptured forms, the research reveals distinct signs, including the air crescent sign, water lily sign, and dry cyst sign. Emphasizing the pivotal role of CT in diagnosing, sizing, and locating hydatid cysts, this section offers valuable insights into both prevalent and rare scenarios.

Figure 2. a.) and b.) axial and sagittal computed tomography images of a patient with uncomplicated hydatid cysts on an atypical location in the inferior anterior mediastinal space and attached to the pericardium at the level of the right ventricle. b.) there are concomitant liver hydatid cysts with discrete rim calcification.

Results

35 patients (64%) were diagnosed with either solitary or multiple parenchymal hydatid cysts without signs of complication or impending rupture. 10 patients, all children, had concomitant multiple liver cysts. The remaining 20 patients (36%) had complicated parenchymal and atypically located hydatid cysts.

Figure 3. a.) conventional x- ray, posterior- anterior (PA) projection of a complicated hydatid cyst in the lower left lobe with a cumbo or double arch sign; b.) and c.) Axial computed tomography images of a complicated, ruptured hydatid cyst, mediastinal and parenchymal window, demonstrating a classical “water lilly sign” with the ruptured membranes floating on the surface of the fluid.

Conclusion

In summary, this research underscores the critical role of computed tomography in unraveling the complexities of thoracic hydatid cysts. Beyond its contribution to identifying common manifestations, CT emerges as an indispensable tool for deciphering rare, atypical, and complicated presentations. The information provided by CT scans not only facilitates accurate diagnosis but also deepens our understanding of cyst morphology, aiding in predicting potential complications or rupture. The knowledge derived from this study stands poised to elevate diagnostic practices and enrich the collective understanding of thoracic hydatid disease.

References

[1] Durhan G, Tan AA, Düzgün SA, Akkaya S, Anyürek OM. , (2020), Radiological manifestations of thoracic hydatid cysts: pulmonary and extrapulmonary findings., Insights Imaging., 116, 11(1), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7658283/, 2024-01-01
[2] Garg MK, Sharma M, Gulati A, Gorsi U, Aggarwal AN, Agarwal R, Khandelwal N. , (2016), Imaging in pulmonary hydatid cysts, World J Radiol., 581-7, 8(6), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4919757/, 2024-01-01
[3] Khuroo, M. S. , (2002), Hydatid disease: current status and recent advances, Ann Saudi Med, 56-64, 22

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CONTENT

Imaging Insights: Computed Tomography presentation of thoracic hydatid cysts in North Macedonian patients

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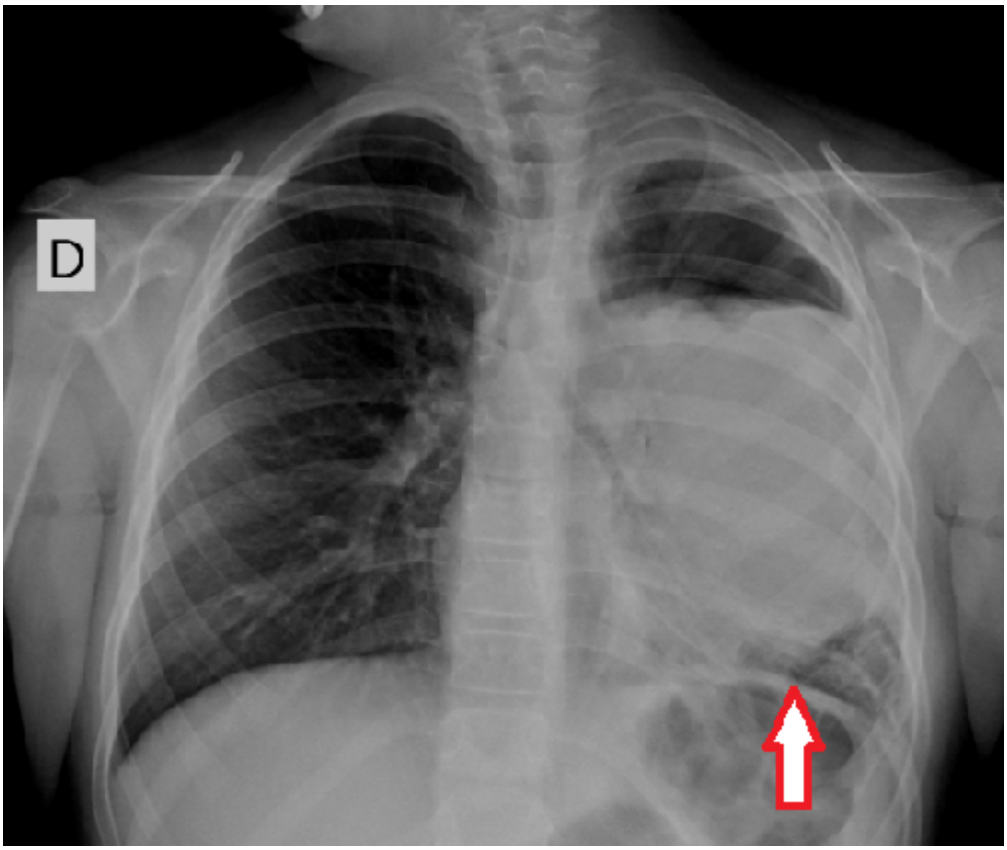
Purpose/Objectives
This study endeavors to achieve several key objectives to enrich the comprehension and help gain proficiency in identifying and interpreting a spectrum of thoracic hydatid disease manifestations on Computed Tomography, ranging from common to rare presentations. Furthermore, the study aims to enhance practitioners' capability in recognizing potential complications and mastering the intricacies of differential diagnosis in this context.

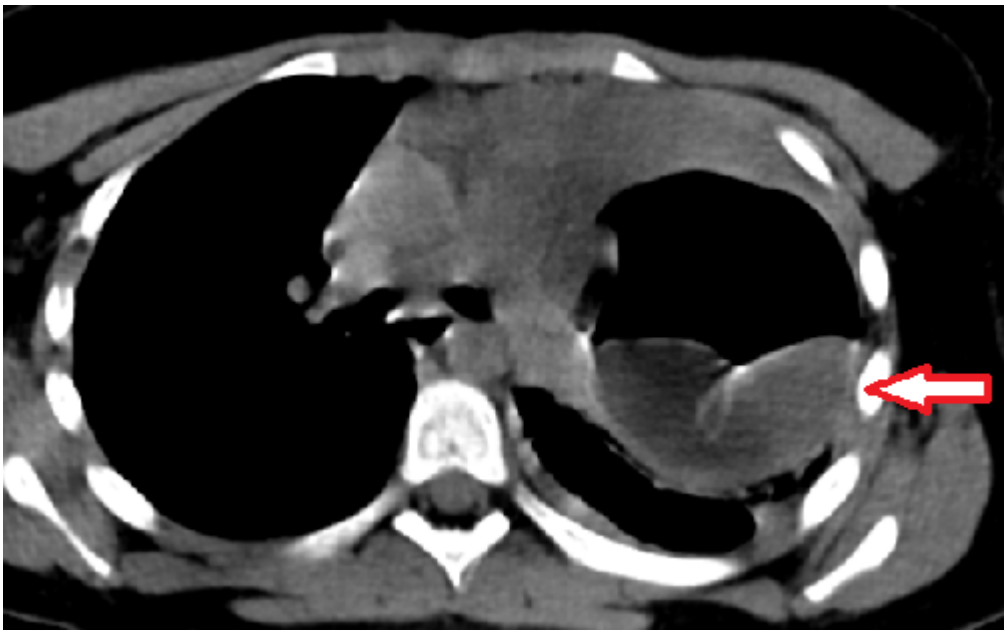
Methods & Materials
Delving into the complex realm of hydatid cysts, originating from the larval form of Echinococcus, this research addresses a pressing global challenge[1][2]. While traditionally associated with liver parenchyma, the disease's manifestation in atypical thoracic locations, including the mediastinum and pleural space, necessitates a sophisticated diagnostic approach. This article provides a contextual exploration, shedding light on the endemic nature of hydatid disease, particularly prevalent in regions associated with sheep breeding, and underscores the urgency for precise diagnostic tools.
CT not only aids in accurate diagnosis but also provides unparalleled insights into the exact size, location, and internal structure of hydatid cysts, crucial for comprehensive patient management[3]. Moreover, it stands as the primary modality for predicting potential complications, such as cyst rupture, by offering a detailed view of cyst morphology[4][5].

Results
In a meticulous analysis of 55 chest CT scans from patients in North Macedonia with thoracic hydatid cysts, this study unveils compelling imaging findings. Categorizing cysts into uncomplicated parenchymal,

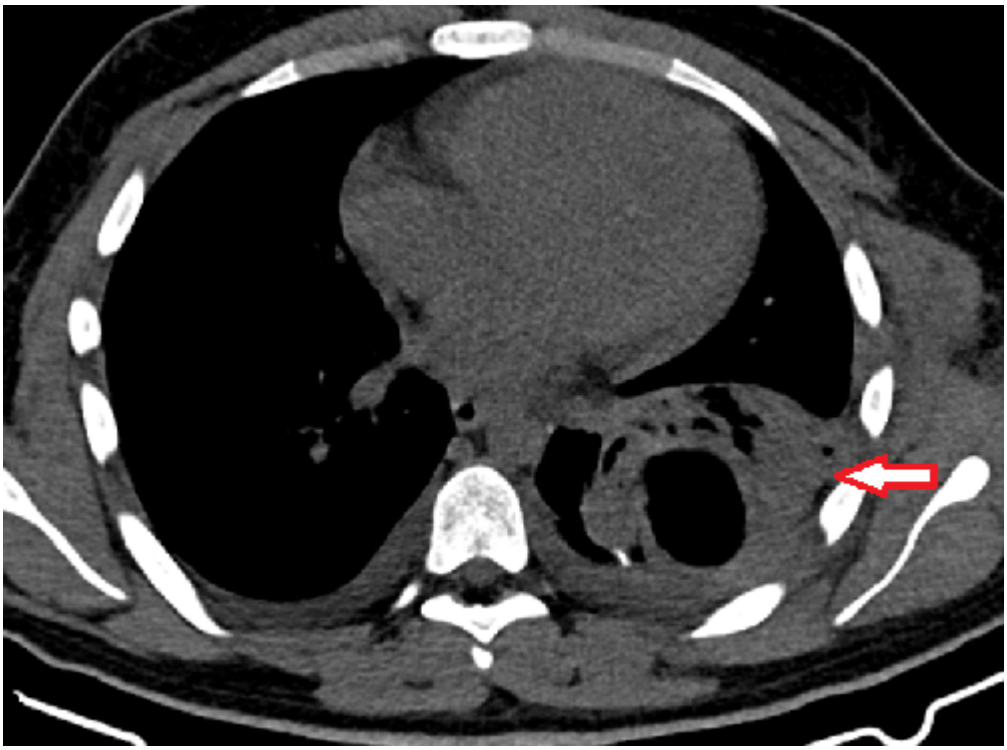
extra-parenchymal, and complicated or ruptured forms, the research reveals distinct signs, including the air crescent sign, water lily sign, and dry cyst sign



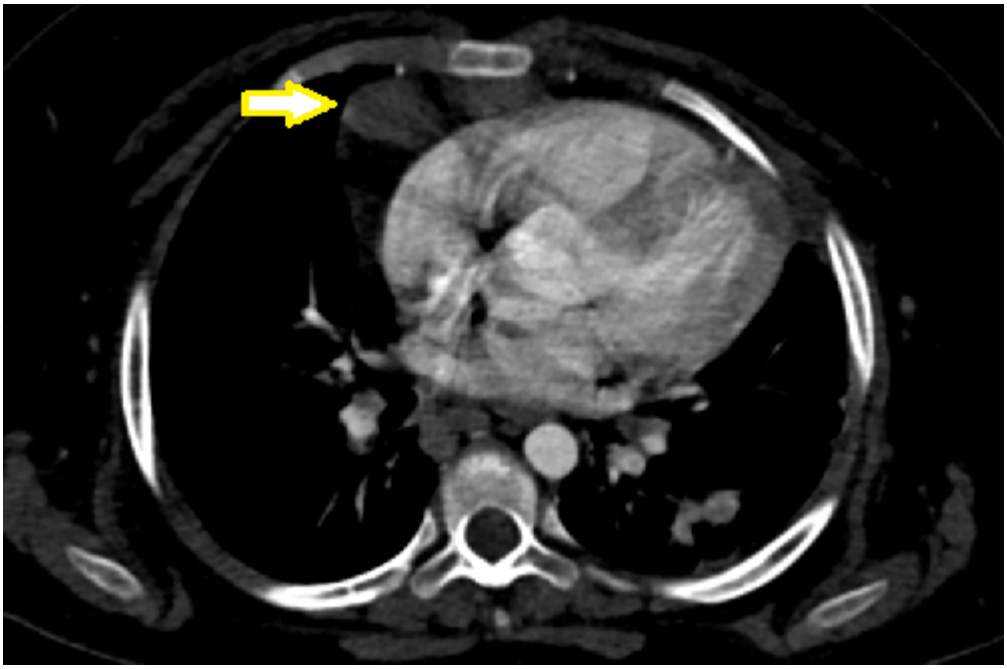
Posterior-Anterior (PA) projection chest x-ray reveals complicated hydatid cyst in the lower left lobe, highlighting cumbo or double arch sign



Axial CT image captures complicated, ruptured hydatid cyst in mediastinal window, showcasing the classic 'water lily sign' with ruptured membranes afloat on fluid surface



Axial CT image displays complicated, ruptured hydatid cyst with fully expectorated fluid, crumpled endocyst settling at the cyst base, resembling a 'mass within a cavity.' Noteworthy surrounding features include reactive pneumonia and mild bilateral pleural effusion
. Uncommon extra-parenchymal locations, such as the mediastinum and pericardium, add a layer of complexity



Unconventional location of an uncomplicated hydatid cysts in inferior anterior mediastinum, attached to the pericardium at the level of the right ventricle, axial CT image
. Emphasizing the pivotal role of CT in diagnosing, sizing, and locating hydatid cysts, this section offers valuable insights into both prevalent

and rare scenarios.

Conclusion

In summary, this research underscores the critical role of computed tomography in unraveling the complexities of thoracic hydatid cysts. Beyond its contribution to identifying common manifestations, CT emerges as an indispensable tool for deciphering rare, atypical, and complicated presentations. The information provided by CT scans not only facilitates accurate diagnosis but also deepens our understanding of cyst morphology, aiding in predicting potential complications or rupture. The knowledge derived from this study stands poised to elevate diagnostic practices and enrich the collective understanding of thoracic hydatid disease.

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[1] Khuroo, M. S. , (2002), Hydatid disease: current status and recent advances, Ann Saudi Med, 56-64, 22
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