



Measles-Associated Appendicitis Diagnosed on Histopathology

Samia Ashiq¹, Yasmeen Ajaz^{1*}, Ayesha Aijaz² Ghodratollah Nowrasteh³

1. *SAMIA ASHIQ, Medical Intern, Medcare hospital Al Safa, Dubai Health Authority (DHA)*
2. *YASMEEN AJAZ, Consultant Internal medicine and Endocrinology, Medcare hospital Al Safa*
3. *AYESHA AIJAZ, Medical student, year 3, Gulf medical university, Ajman*
4. *GHODRATOLLAH NOWRASTEH, Consultant General surgery, Medcare hospital Al Safa*

***Correspondence to:** Dr. Yasmeen Ajaz, Internal medicine, Medcare Hospital Al Safa.

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Received: 05 February 2024

Published: 28 February 2024

DOI: <https://doi.org/10.5281/zenodo.10721581>

Abstract

Measles, caused by the highly contagious measles virus, is recognized for its respiratory and systemic manifestations. Typically, the diagnosis of measles can be made with the appearance of the characteristic maculopapular rash. However, histopathology has made it possible to make a diagnosis of measles from appendectomy samples even before the appearance of the symptoms [1,2]. This case reports details a patient with an uncommon measles complication of acute appendicitis who underwent appendectomy. Post-surgery, diagnosis of measles in the prodromal stage was made after observing the characteristic warthin-finkeldey giant cells in the hyperplastic mucosa associated lymphoid tissue of the appendix specimen. this histopathological diagnosis aided in early intervention and treatment of measles before the onset of rash, symptoms, and potential complications. This case report not only highlights appendicitis as a rare and uncommon complication of measles but also discusses the timely diagnosis of measles in the prodromal stage and the successful management of this virus.

Keywords- *Measles, Appendicitis, Warthin-finkeldey cells.*

Introduction

Measles, a highly contagious viral illness, characterized by fever with upper respiratory symptoms, conjunctivitis & followed by a distinctive maculopapular skin rash^[2]. The causative agent, an enveloped RNA virus of the paramyxoviridae family, possesses a genome of 16,000 nucleotides. The incubation period ranges from 7 to 23 days with the characteristic rash usually appearing between 2 and 4 days after the prodrome. Cases of measles are infectious 4 days before rash onset until 4 days after the rash has appeared^[5]. While the typical clinical manifestations of measles have been extensively documented, more attention needs to be shifted to explore less common atypical presentations and complications of measles including otitis media, bronchopneumonia, laryngotracheobronchitis, and rarely measles associated appendicitis.^[2]

Case presentation

Our case is of a 32-year-old Male, with no known co-morbidities, who presented to the emergency department with fever of 38°C, vomiting, mild diarrhea, epigastric and umbilical pain radiating to the right iliac fossa. He had no significant past medical, surgical, family, social and travel history. He was conscious, alert and vitally stable.

On examination, abdomen was soft and lax, with epigastric, umbilical, and right lower quadrant tenderness and rebound tenderness. Lab investigations were ordered and showed positive leukocytosis of 11.2×10^9 per L .

CT abdomen and pelvis (*fig.1*) with contrast was ordered and it showed a relatively long pelvic appendix with diameter up to 6.6mm. On the post contrast scan, the distal end of the appendix showed some wall thickening and mural enhancement with low density centrally, representing early changes of appendix inflammation.

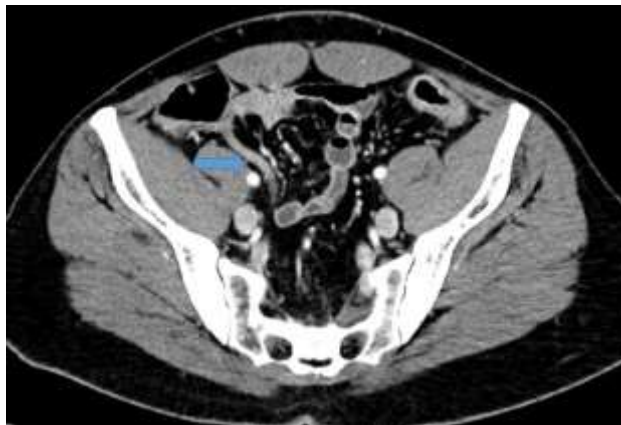


Figure 1 -CT Abdomen and pelvis

Based on the clinical examination, labs and imaging a diagnosis of acute appendicitis was made and patient was referred for laparoscopic appendectomy. An inflamed retrocecal appendix was removed. post operatively the patient was recovering well. Routinely A specimen was sent for histopathology. The histopathology results showed Hyperplastic mucosal lymphoid tissue with warthin-finkeldey like cells. The Morphology was consistent with the prodromal stage of measles. 1 day Later the patient presented with the characteristic maculopapular rash. IgM measles antibody was positive, and the patient was managed conservatively.

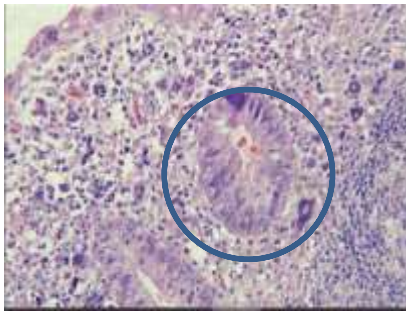
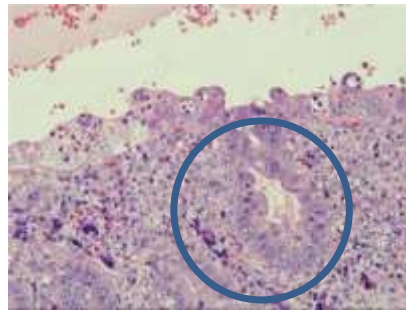
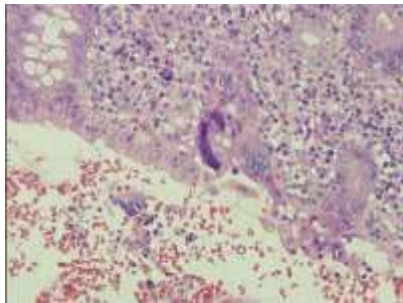
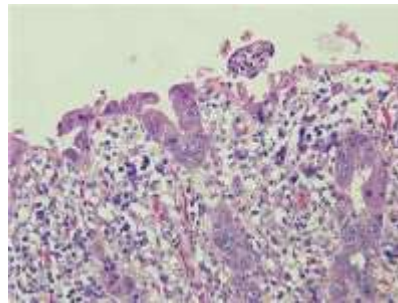
*Figure 2a**Figure 2b**Figure 3a.**Figure 3b.*

Figure 2a,2b- Perifollicular space shows multinucleated cells having the appearance of grape like clusters enclosing multiple, round, regular sized dark nuclei with inconspicuous nucleoli (warthin finkeldey like cells). Admixed eosinophils (8-10/hpf) seen. These warthin finkeldey like cells also seen with the germinal centre. Muscularis layer and serosa appears unremarkable. No evidence of parasite/granuloma/atypia.

Figure 3a, 3b-The section shows appendicular mucosa with surface epithelium and crypts showing frequent multinucleation with nuclear moulding and prominent nucleoli. Scattered intraepithelial neutrophils and also eosinophils seen. Lamina propria mildly expanded with hyperplastic lymphoid nodules showing prominent germinal centres.

Discussion

This case report delves into a fascinating aspect of measles pathology, specifically its involvement with the appendix, a phenomenon supported by sporadic case reports. In 1931, Warthin and Finkeldy were the first to independently describe the appearance of giant cells tonsillar tissue during the prodromal stages of measles. One year later, these same giant cells were noted in appendectomy specimens by Herzberg and by Davidsohn and Mora.

Thereafter, there have been notably few case reports of measles-associated appendicitis in the literature.^[1,4] In the beginning, the measles virus attaches to the respiratory lining cells and replicates. It then disseminates to the lymphoid tissues throughout the body. Replication of the virus in the lymphoid tissue induces lymphoid hyperplasia and formation of the characteristic reticuloendothelial giant cells and warthin-finkeldy cells. This can be clearly seen histopathologically in the appendix as the appendix contains MALT, therefore aiding in the diagnosis of measles like in our patient.^[1]

The measles virus is notorious for its capacity to induce immune suppression leading to opportunistic infections. In prodromal patients, measles virus has been found to infect a range of cells, including memory CD4+ and CD8+ T cells, naive memory B cells, epithelial cells, macrophages, and dendritic cells.^[5]

Measles is associated with significant morbidity and mortality. In 2017 it was reported that measles was responsible for more than 100 000 deaths worldwide every year, down from more than 2 million deaths annually before the widespread use of measles vaccine. Case fatality ratio estimates vary from <0.01% in developed countries to >5% in the developing countries.^[3,5]

Vaccination with 2 doses of MMR in >95% of children is necessary to eliminate measles. Adults who have had measles in childhood are immune. Reduced measles, mumps and rubella (MMR) vaccination uptake has led to the decreased herd immunity and increase in measles cases throughout the world, so administering measles vaccine should be considered for unvaccinated travelers in high incidence countries.^[3,5]

In conclusion, cases of measles have witnessed a resurgence due to decreased vaccination uptake, it has become imperative to explore the diverse clinical implications of this viral infection. This report aims to contribute to the growing body of knowledge surrounding measles-associated complications, focusing on the appendix and its potential involvement in the context of measles infection. Understanding such atypical presentations and the histopathological diagnosis of warthin-finkeldey giant cells is crucial for healthcare providers to enhance diagnostic acumen and provide timely intervention to decrease the disease course,

minimize symptoms and prevent other severe complications.

Acknowledgements

None

Competing Interests

None declared

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