World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

Check for updates

Lung disease during measles: A clinical case study

A. Mourhri *, S. Moatassime, M. Ijim, O. Fikri and L. Amro

Department of Pulmonology, ARRAZI Hospital, Mohammed VI University Hospital Center, FMPM, LRMS Labo, UCA, Marrakech, Morocco.

World Journal of Advanced Research and Reviews, 2025, 28(02), 2535-2538

Publication history: Received 15 October 2025; revised on 26 November 2025; accepted on 29 November 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.28.2.3967

Abstract

Measles is an acute and highly contagious viral disease caused by the measles virus, a member of the paramyxoviridae family. It is mainly transmitted via the respiratory system through droplets or aerosols. The incubation period is 10 to 12 days, followed by initial symptoms including high fever, cough, rhinitis, conjunctivitis, and Koplik spots. A maculopapular rash appears a few days later, beginning on the face and spreading to the rest of the body. Although often benign, measles can cause serious complications, particularly lung disease, which may result from viral invasion and an excessive immune response. Symptoms include cough, respiratory distress, and sometimes severe hypoxia. Prevention is primarily through vaccination, which significantly reduces the incidence of severe forms and associated respiratory complications. We report the case of a patient with measles complicated by pulmonary involvement.

Keywords: Measles; Pulmonary Disease; Malnutrition; Pulmonary Nodules; Vaccination

1. Introduction

Measles, caused by the Morbillivirus, is highly contagious and remains a public health challenge worldwide despite effective vaccines. Although often perceived as benign, measles can cause serious complications, particularly pulmonary disease, which is a major cause of morbidity and mortality among young children, immunocompromised, and malnourished populations. Pulmonary disease results from viral action on respiratory cells and transient immunosuppression, which promotes bacterial superinfections. Understanding these mechanisms is essential to optimize clinical management and reinforce the importance of vaccination.

2. Patient and Observation

This is a 47-year-old patient, a native and resident of El Haouz, a housewife, no toxic habits or specific exposure, unvaccinated according to the national immunization program and having a notion of contact with a case of measles in the entourage, who has a flu syndrome followed at 4 months by a generalized morbiliformemaculopapulous rash in the face, trunk, and upper and lower limbs and conjunctival hyperemia.The evolution was marked by the appearance of a dry cough without hemoptysis associated with a stage III dyspnea sadoul, all evolving in a febrile context at 38.8°C , and alteration of the general condition (asthenia, anorexia and weight loss of 4kg).The pleuropulmonary examination has identified some bilateral sibilant noises.A chest x-ray was performed: reticulo-micronodular images at the level of the two pulmonary hemicamps.

Biologically, NFS was free of abnormalities : GB:5030 PNN:3280 Lym:1549 Hb:15.6 , increased CRP to 84.28, hepatic cytolysis ASAT at 331 and ALAT at 304 were negative for rapid HIV test.

CT chest: Nodular foci surrounded by frosted glass associated with some neighboring micronodules of infectious origin.

* Corresponding author: A. Mourhri

Figure 1 A chest x-ray demonstrated Bilateral reticulo-micronodular opacities.

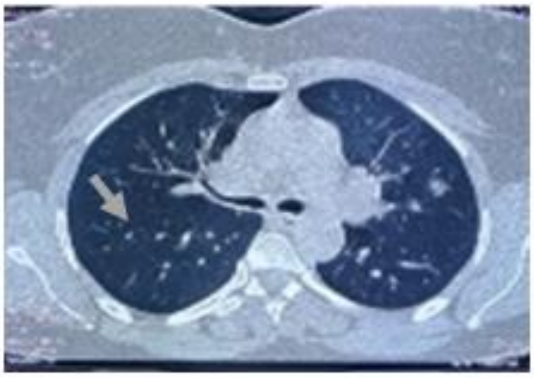

Figure 2 Chest CT revealed Nodular Fireplaces Surrounded by Frosted Glass.

Diagnosis of a pulmonary disease secondary to measles was retained; the patient was nebulized by ventoline/atrovent every 4 hours, antipyretic and analgesic treatment, and vitamin A: 1 ampoule at J1, J2, and J28; esomeprazole: 20 mg: 1 gel/j, with close monitoring of clinical parameters: oxygen saturation, heart rate, respiratory rate, and blood pressure.

The patient's clinical course was favorable, with progressive improvement of respiratory symptoms under supportive treatment. Follow-up imaging showed partial resolution of pulmonary lesions, confirming good recovery.

3. Discussion

Measles is highly contagious and caused by the paramyxovirus family. Although the disease is best known for its characteristic rash, pulmonary complications are a major cause of morbidity and mortality, particularly in unvaccinated children, immunocompromised patients, and malnourished individuals [1, 2, 3]. Infection begins with inhalation of respiratory droplets containing the virus, which initially targets epithelial cells in the upper respiratory tract. Once in the body, the virus spreads by lymphatic and hematogenic routes, causing transient immunosuppression [4]. This immunosuppression promotes not only direct lung damage but also secondary infections, mainly bacterial [5].

Respiratory disease related to measles occurs in a variety of clinical forms:

3.1. Bronchitis and bronchiolitis:

Inflammation of the lower respiratory tract, they result in a persistent cough and rashes [1, 6].

Primary measles pneumonia: This form is a direct result of viral infection. It is common in immunocompromised or malnourished patients and is manifested by high fever, severe cough, hypoxemia, and diffuse interstitial infiltrates on chest radiography [4, 7].

Bacterial Side Infections: Secondary bacterial pneumonia, often caused by Streptococcus pneumoniae *and Staphylococcus aureus* are common and aggravate the prognosis [3, 8].

3.2. Giant cell pneumonia (Hecht's disease):

This rare form occurs mainly in immunocompromised patients. It is characterized by diffuse pulmonary infiltrates and severe hypoxemia [9].

- Several factors increase the risk of pulmonary complications related to measles:
- Malnutrition: A deficiency of vitamin A aggravates lung damage [10].
- Immunosuppression: Patients with HIV or receiving immunosuppressants have an increased risk of severe forms [7,9].
- No vaccination: Measles remains endemic in some areas, with insufficient immunization coverage [2].

3.3. Diagnosis is based on clinical, radiological, and virological criteria:

- Clinical: Fever, conjunctivitis, cough, and rash usually precede pulmonary complications [1].
- Chest x-ray: It reveals diffuse interstitial infiltrates or focal points of consolidation [6].
- Virological analysis: Detection of viral RNA by RT-PCR is a sensitive and specific method [4]

3.4. Treatment combines support measures and specific interventions:

- Vitamin A administration: It significantly reduces morbidity and mortality [10].
- Treatment of secondary infections: Antibiotics are essential for bacterial superinfections [8].
- Intensive care: In severe respiratory failure, oxygen therapy or mechanical ventilation may be required [7].

Vaccination is the most effective strategy for preventing measles and its complications. The MMR (Measles-Mumps-Rubella) vaccine is safe, effective, and affordable. High immunization coverage is crucial to achieving collective immunity and reducing the incidence of disease [2,3].

4. Conclusion

Measles-related lung disease is a serious complication, especially in vulnerable populations. Improved vaccination rates, vitamin A administration and early management of complications reduce the severity of this preventable disease.

Compliance with ethical standards

Disclosure of Conflict of Interest

The authors declare no conflict of interest.

Statement of Informed Consent

Informed consent was obtained from all participants included in the study.

References

[1] Moss WJ, Griffin DE. Measles. The Lancet. 2012;379(9811):153–164. → https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)62352-5/fulltext The Lancet+2PubMed+2

[2] Perry RT, Halsey NA. The clinical significance of measles: A review. J Infect Dis. 2004;189(S1):S4–S16. → https://doi.org/10.1086/377712 Johns Hopkins University+1

[3] World Health Organization. Measles fact sheet. 2021. → https://www.who.int/news-room/fact-sheets/detail/measles who.int

[4] Laksono BM, et al. Immunosuppressive properties of measles virus. Curr Opin Virol. 2020; 41:36–43.

[5] Mina MJ, et al. Measles virus infection diminishes preexisting antibodies that offer protection from other pathogens. Science. 2015 (2019 published); 348(6235):694–699. → https://doi.org/10.1126/science.aay6485 science.org+1

[6] Hussey GD, Klein M. A randomized, controlled trial of vitamin A in children with severe measles. N Engl J Med. 1990; 323(3):160–164. : 10.1056/NEJM199007193230304

[7] Garenne M, et al. The impact of measles vaccination on pneumonia mortality in sub-Saharan Africa. Bull World Health Organ. 2005; 83(10):675–680. PMC2393147

[8] Berkley JA, et al. Bacteremia among children admitted to a rural hospital in Kenya. N Engl J Med. 2005; 352(1):39–47. 10.1056/NEJMoa040275

[9] Griffin DE. Measles as a model for understanding immune suppression. Curr Top Microbiol Immunol. 2021; 428:41–54. 10.1111/j.1600-065X.2010.00925.x

[10] Sommer A, et al. Impact of vitamin A supplementation on childhood mortality. The Lancet. 1983; 1(8336):1169–1173. 10.1016/s0140-6736(86)91157-8