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[Case Study] Mumps pneumonia in adults – a forgotten entity

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Abstract

A young adult male with no previous comorbidities presented with complaints of fever since 10 days and right cheek swelling since one week duration. Ultrasonography (USG) guided fine needle aspiration cytology (FNAC) of intraparotid lymph node showed ‘reactive lymphadenitis’. He was started on antibiotics and symptomatic treatment. He later developed breathlessness and desaturation following which he was shifted to the intensive care unit (ICU) and given non-invasive ventilation (NIV). Chest X-Ray (CXR) showed features suggestive of bilateral pneumonia. Mumps immunoglobulin-meta (IgM) was found to be positive. He improved over the next few days and was discharged.

Background

The acute illness brought on by the mumps virus is typically self-limiting. Before the widespread adoption of an effective vaccination, mumps mostly affected young children.[1] It is a very contagious illness that can be spread through direct contact, respiratory droplets, and fomites.[2] The parotid glands are largely affected by the mumps virus infection. The diagnosis is easily made in the outpatient setting by clinical examination and palpation of the swollen parotid gland. Laboratory tests are not frequently needed but provide supportive evidence if available. The treatment for mumps, like most viral infections, is symptomatic, and there is no specific therapy. Since the majority of children having received their vaccinations within the first two years of life, adults seldom contract the mumps virus. It can be difficult to diagnose extra-parotid signs of mumps since they are uncommon. Orchitis, meningitis and encephalitis are the most often occurring severe side effects. An uncommon and unexpected presentation of the mumps virus is pneumonia. In this case report, an adult patient with fever and unilateral parotid enlargement developed severe pneumonia complicated by acute respiratory distress syndrome (ARDS) requiring ICU shift and NIV who subsequently was found to be IgM positive for mumps virus.

Case Presentation

A young adult male, recovery officer at a bank, with no known comorbidities presented with complains of fever since 10 days and swelling of right cheek since 7 days. The swelling was firm, non-tender and mobile, associated with high grade

intermittent type of fever. USG of the neck showed ‘Bulky right parotid gland with enlarged intraparotid lymph nodes’. USG guided FNAC was done of the right intraparotid lymph node and was suggestive of reactive lymphadenitis. He was started on antibiotics and other supportive measures. On the second day, he developed sudden onset breathlessness, chest pain and desaturation to 65% in room air. He was started on 4L/min O2 via face mask. An electrocardiogram (ECG) was done which showed S1Q3T3 pattern + sinus tachycardia suspicious of Pulmonary thromboembolism (PTE). (Fig. 1) D-dimer was found to be elevated following which a 2-dimensional echocardiography (2D ECHO) was done which was normal. ENOXAPARIN 0.6MG once daily was started and Computerised tomography pulmonary angiogram (CTPA) was done which showed ‘No evidence of pulmonary thromboembolism. Bilateral lower lobes patchy consolidation. Multiple parenchymal nodular lesions of upper lobes - likely infective etiology. Minimal bilateral pleural effusion’. (Fig. 2) On the fifth day, he developed tachypnea of 34 cycles per minute (cpm) and repeat CXR revealed bilateral alveolar infiltrates suggestive of pneumonia with ARDS. (Fig. 3) Patient was shifted to ICU as tachypnea had worsened to 40 cpm with a saturation of 95% on 6L/min O2 via face mask. Arterial blood gas analysis (ABG) showed hypoxemia and he was confirmed to have ARDS. NIV was started, antibiotics were changed and patient improved. Mumps IgM was sent and was found to be positive. He was evaluated for other complication of mumps like orchitis, encephalitis and myocarditis which were absent. Over the next few days, NIV was tapered off, he became symptomatically better and was shifted to wards four days later with supplemental O2. Subsequently, he was completely tapered off O2, CXR shadows resolved (Fig. 4) and was discharged.

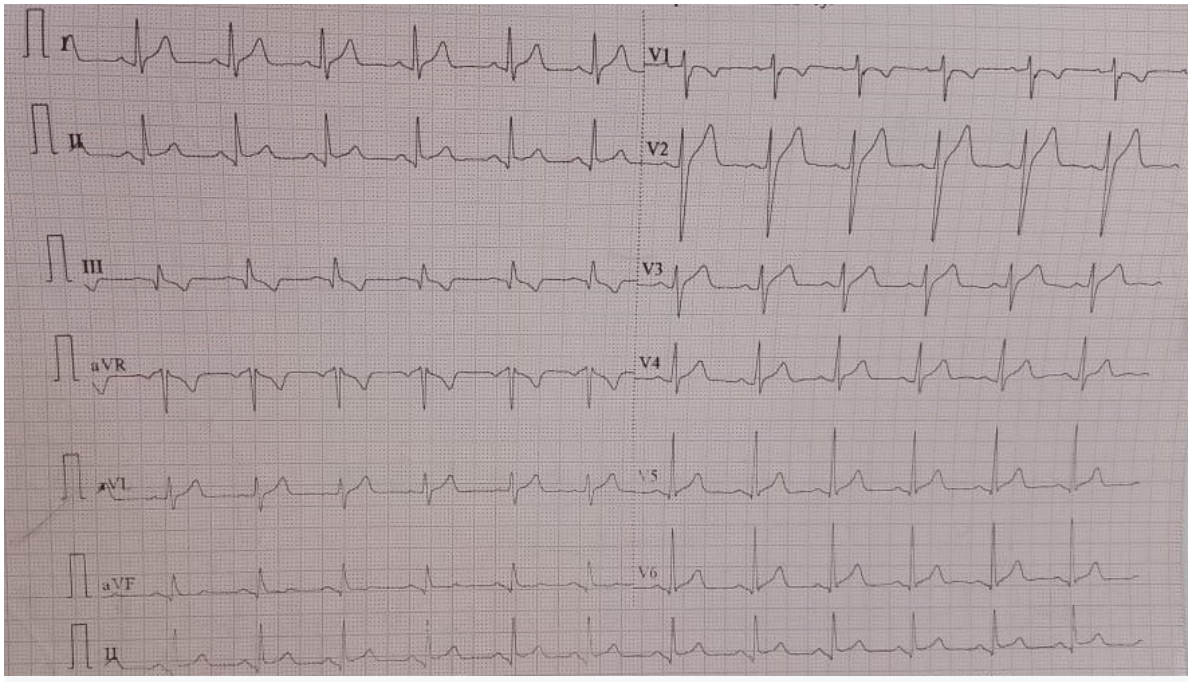

Fig. 1. *ECG showing S1Q3T3 pattern + sinus tachycardia suspicious of PTE*

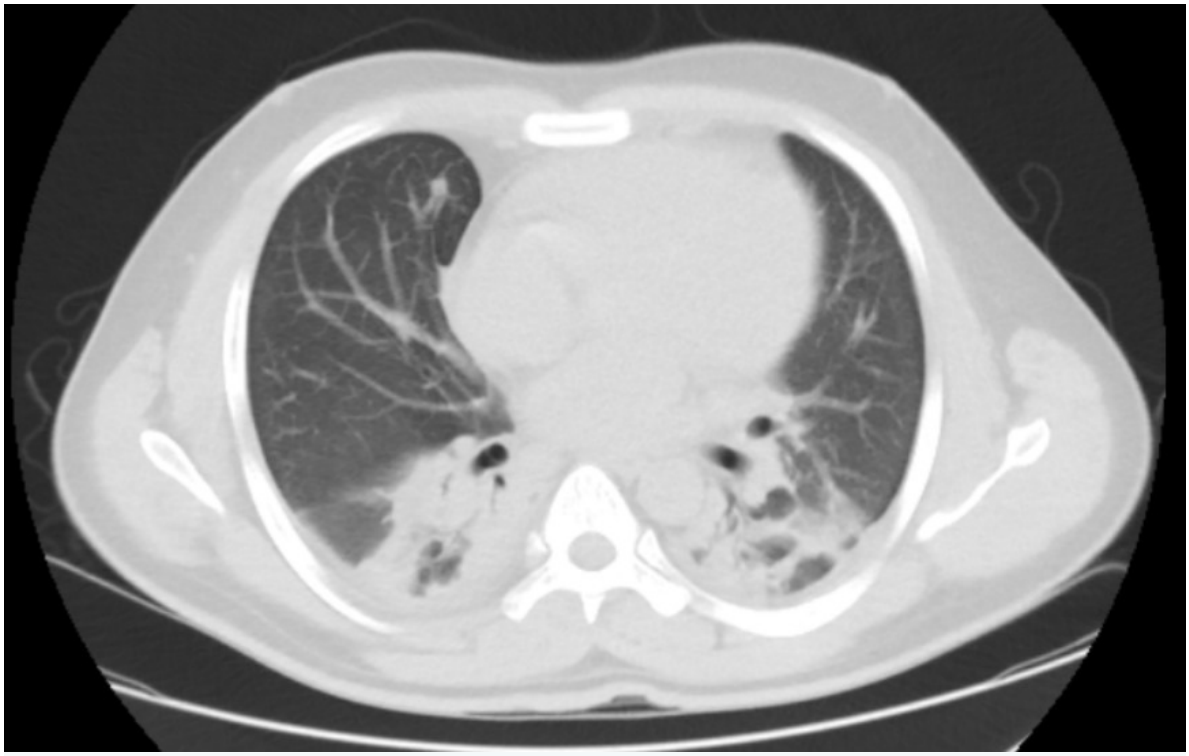

Fig. 2. *Parenchymal cuts of CTPA showing bilateral lower lobe consolidation*

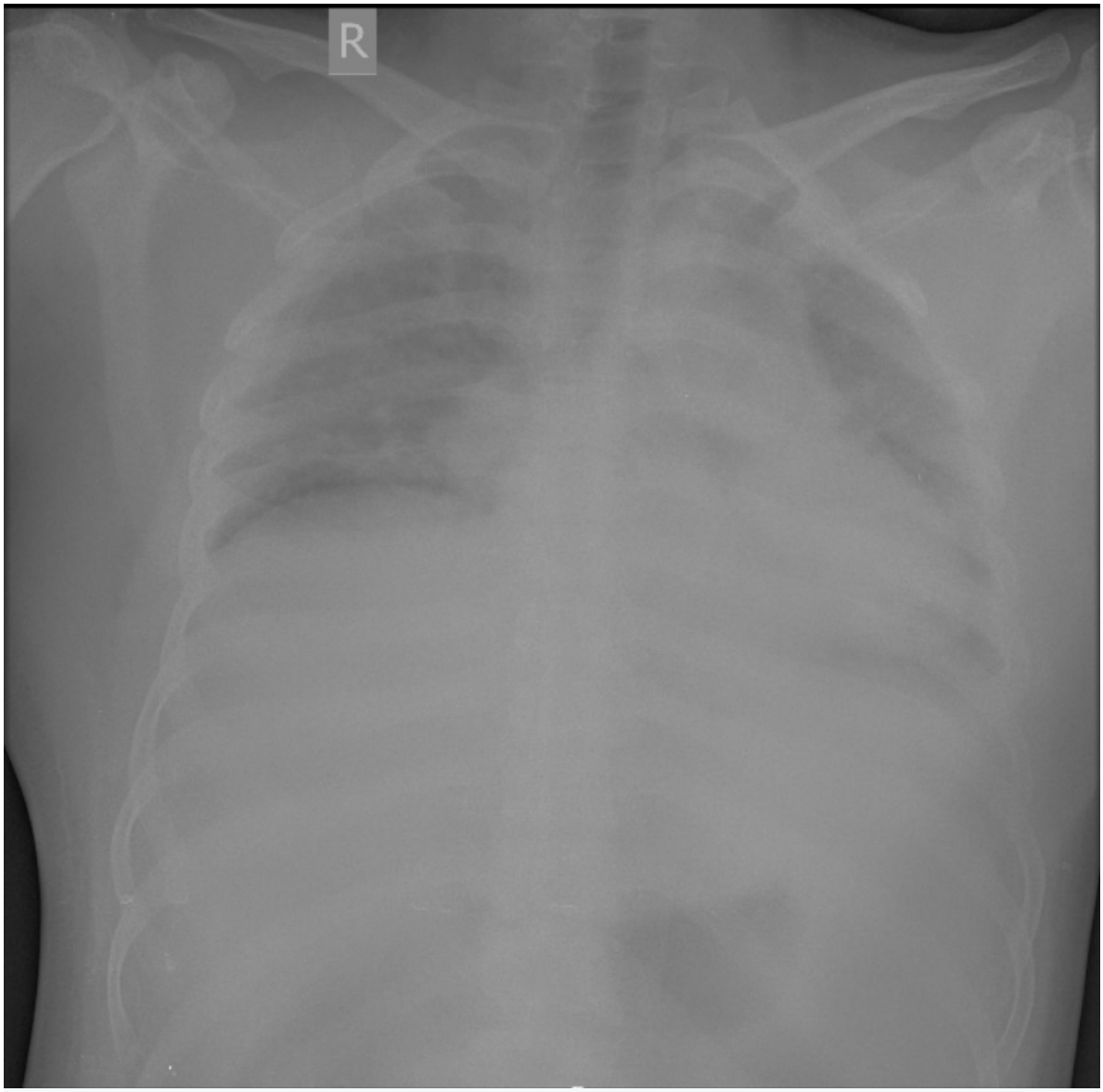

Fig. 3. *CXR showing features suggestive of bilateral pneumonia with ARDS*

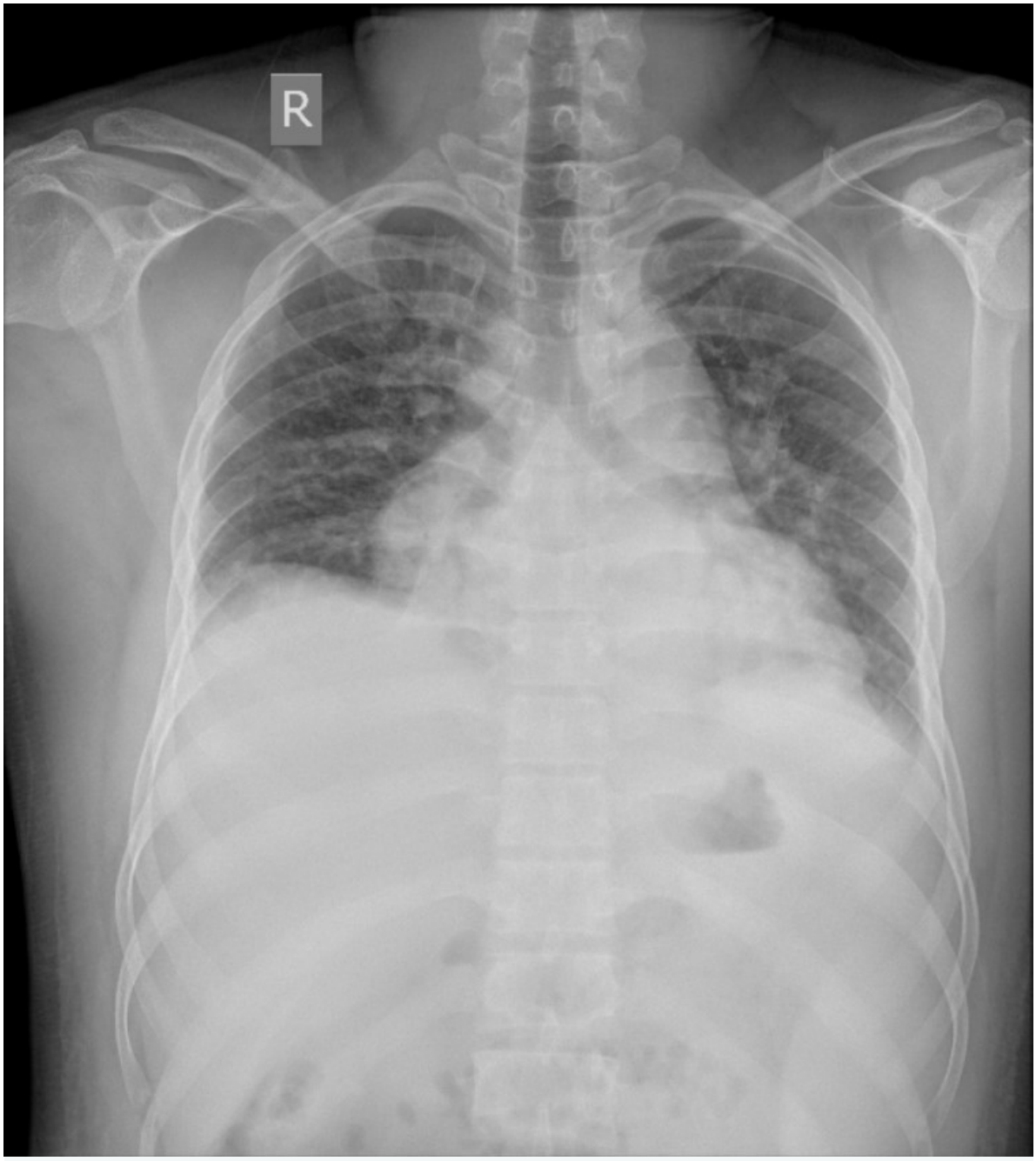

Fig. 4. *CXR showing resolution of shadows following NIV and other supportive treatment*

Investigations

USG of the neck showed ‘Bulky right parotid gland with enlarged intraparotid lymph nodes’.

FNAC of the right intraparotid lymph node was suggestive of reactive lymphadenitis.

ECG showed S1Q3T3 pattern + sinus tachycardia suspicious of PTE.

2D ECHO was normal

CTPA showed ‘No evidence of pulmonary thromboembolism. Bilateral lower lobes patchy consolidation. Multiple

parenchymal nodular lesions of upper lobes - likely infective etiology. Minimal bilateral pleural effusion'.

ABG was suggestive of type 1 respiratory failure/hypoxemia

Covid-19 real-time polymerase chain reaction (RT-PCR) was negative

RT-PCR for Influenza virus was negative.

Mumps IgM was reported as positive.

Differential Diagnosis

The initial clinical picture was suspicious of pulmonary thromboembolism but was subsequently ruled out with a CTPA.

Covid-19 pneumonia and Influenza pneumonia were considered but was ruled out with RT-PCR of throat swab.

Treatment

Patient was treated with empirical antibiotics like piperacillin-tazobactam and metronidazole.

He was also given symptomatic treatment with trypsin-chymotrypsin with diclofenac and chlorhexidine mouth wash.

He was given positive pressure ventilation with NIV in the ICU.

Outcome and Follow-up

On follow up, patient was symptomatically much better and chest x-ray shadows had resolved.

Discussion

The mumps virus is a part of the paramyxoviridae family under the genus Rubulavirus. It is a single-stranded encapsulated RNA virus. The only known natural host for the mumps virus is humans. It is a highly contagious infection that is spread through oral contact with contaminated respiratory droplets. The virus multiplies in the upper respiratory tract epithelium during the 2-4 week incubation period. The virus spreads throughout organs because of transient plasma viremia, including the parotid glands, pancreas, urinary tract, and sexual organs.[3] Malaise, nausea and low-grade fever are typically part of the non-specific viral prodrome that goes along with mumps infection.[4] In 48 hours, parotitis, which results in parotid swelling, follows these symptoms. Within a few weeks of the commencement of symptoms, it resolves. In contrast to this typical presentation, 15%–20% of patients have silent disease, and up to 50% of patients have primarily respiratory symptoms along with other nonspecific symptoms, for which a mumps diagnosis is not typically made.[5] Symptomatic illness in adults is more severe than in kids. The three most frequent severe side effects of the

mumps are orchitis, meningitis and encephalitis. Although the diagnosis of mumps can be made with history and clinical examination, it is confirmed by serological methods[6] (detection of virus-specific IgM antibodies 7–10 days after the onset of symptoms). For the employed IgM test, the diagnostic specificity and sensitivity are >95%.[7] There isn't a specific antiviral treatment for mumps at the moment. Given that the illness is typically benign and self-resolving, the majority of the treatment focuses on symptom management and supportive care. It is extremely uncommon for mumps infection to result in pneumonia, let alone ARDS. Two case reports, one by Sharma N *et al.*[8] and the other by Fujita K *et al.*[9] describe this uncommon occurrence. In our case report, the patient is a young adult male with no previous illnesses or comorbidities who presented with fever since 10 days and a right sided parotid swelling since 7 days. He was proven to have pneumonia caused by the mumps virus. He developed ARDS which required ICU shift and positive pressure ventilation with NIV. He subsequently recovered, CXR shadows resolved and was discharged.

Learning Points / Take Home Messages

- This case report shows that mumps can be contracted even by adults who have taken the mandatory mumps, measles and rubella (MMR) vaccine in childhood.
- It also outlines one of the uncommon manifestations of mumps virus, that is mumps pneumonia with ARDS.
- Suspecting mumps is important even when an adult patient presents with fever and parotid swelling.

References

1. ^*Dayan GH, Rubin S. Mumps outbreaks in vaccinated populations: Are available mumps vaccines effective enough to prevent outbreaks? Clin Infect Dis 2008;47:1458-67*
2. ^*Gupta RK, Best J, MacMahon E. Mumps and the UK epidemic 2005. BMJ 2005;330:1132-5*
3. ^*Hviid A, Rubin S, Mühlemann K. Mumps. Lancet 2008;371:932-44.*
4. ^*Wharton M, Cochi SL, Williams WW. Measles, mumps, and rubella vaccines. Infect Dis Clin North Am 1990;4:47-73.*
5. ^*Foy HM, Cooney MK, Hall CE, Bor E, Maletzky AJ. Isolation of mumps virus from children with acute lower respiratory tract disease. Am J Epidemiol 1971;94:467-72.*
6. ^*Rubin S, Plotkin S. Mumps. In: Vaccines. 6th ed. Philadelphia: Saunders; 2013. p. 419-46.*
7. ^*Ukkonen, P., Penttinen, K. and Granström, M.-L. (1981), Mumps-specific immunoglobulin M and G antibodies in natural mumps infection as measured by enzyme-linked immunosorbent assay. J. Med. Virol., 8: 131-142.*
8. ^*Sharma N, Joshi A, Kumar MK, Nayan N. A case of mumps presenting as severe pneumonia with acute respiratory distress syndrome. Indian J Respir Care 2020;9:227-9*
9. ^*Fujita K, Akutgawa S, Ikeda S, Goto I, Fukuda Y, Min KY, Hanafusa T. [A case of mumps pneumonia complicated with acute respiratory failure]. Nihon Kokyuki Gakkai Zasshi. 2000 Dec;38(12):932-6. Japanese. PMID: 11244731.*