

Pediatric viral orbital cellulites secondary to H1N1 infection: A case report

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A 10-year-old boy admitted for high-grade fever and pneumonia developed left preseptal and early orbital cellulitis, unresponsive to higher intravenous antibiotics. He received oseltamivir, on testing positive for H1N1 virus on the nasopharyngeal and throat swabs. There was dramatic improvement with resolution of orbital cellulitis within 24 h of starting oseltamivir. We report a very rare presentation of pediatric orbital cellulitis secondary to systemic H1N1 infection. Prompt investigations and timely treatment with oseltamivir aided in complete resolution, avoiding vision and life-threatening complications.

Key words: H1N1, orbital cellulites, oseltamivir, preseptal, swine flu

Orbital cellulitis describes infections that involve the tissues posterior to orbital septum, including the fat and muscle within the bony orbit. It is a serious sight and life-threatening condition.^[1] The most common predisposing factor for orbital cellulitis in children is paranasal sinus disease. Infection may also arise from eyelids, face, retained orbital foreign bodies, or hematogenous spread from distant sources. Prompt diagnosis and treatment is essential for treatment of this condition.^[2] We report an interesting case of orbital cellulitis secondary to swine flu / H1N1 infection.

Case Report

A 10-year-old boy was admitted in the pediatric unit with pneumonia. On the second day, he developed pain and swelling of the left eye (OS) and face. On examination, he was conscious, well-oriented, but febrile with a temperature of 102°F. Bedside visual acuity recorded in both eyes was counting fingers more than 3 m. Color vision was normal with normal pupillary reaction. Ocular examination revealed normal right eye (OD), but OS showed swollen tense eyelids with mechanical ptosis with hyperemia and edema of the left periorbital region and face [Fig. 1]. There was no proptosis or presence of any orbital mass. Elevation was limited and painful while other extraocular

movements were free and painless. The OS showed diffuse conjunctival congestion and chemosis, more in the superior fornix. Rest of the anterior segment and fundus examinations were within normal limits. Magnetic resonance imaging (MRI) of cranium and orbits showed pansinusitis involving both ethmoid and maxillary sinuses, left frontal sinus, and soft tissue thickening of ipsilateral face, preseptal extending into the postseptal area superiorly, involving the superior recti muscle [Fig. 2].

Laboratory investigations revealed raised erythrocyte sedimentation rate and C-reactive protein with leucocytosis and neutrophilia. Blood culture and urine culture did not yield any growth. The child was nonresponsive to an empiric course of intravenous antibiotics including third-generation cephalosporins, piperacillin with tazobactam, metronidazole, and amikacin, despite which fever persisted and continued to rise up to 105°F. Meanwhile, nasopharyngeal and throat swabs were taken on the same day, that is, day 2 of admission and outsourced to a government-approved private laboratory (with 24 h facility) for real-time polymerase chain reaction (AgPath). Test was proven positive for H1N1 influenza virus. Following this, oseltamivir, a neuraminidase inhibitor, was started PO q12 h. There was significant reduction in temperature to 100°F within 24 h with simultaneous reduction in periorbital and hemifacial edema and hyperemia [Fig. 3]. Complete resolution of the periorbital swelling was seen in 5 days.

Discussion

The symptoms of swine flu/H1N1 infection include fever with chills, sore throat, muscle pains, severe headache, coughing, and general weakness.^[3] Furthermore, sinusitis, otitis media, croup, pneumonia, bronchiolitis, status asthmaticus, myocarditis, pericarditis, myositis, encephalitis, seizures, toxic shock syndrome, and secondary bacterial pneumonia with or without sepsis are reported in H1N1 infection.^[3,4]

Involvement of the eye in H1N1 infection has been rarely reported in literature. Lai *et al.* reported a case of an 11-year-old child with bilateral acute anterior uveitis, papillitis, and neuroretinitis following an upper respiratory tract infection with H1N1.^[5] Rifkin and Schaal have reported a case of H1N1-associated acute retinitis in HIV-positive adult male.^[6] Anterior uveitis, subconjunctival hemorrhage, and optic neuritis have been described in H1N1 infections by Nakagawa *et al.*^[7] Following the pandemic of 2009 H1N1 outbreak, public health agencies worldwide instituted immunization campaigns to combat the H1N1 influenza. Belliveau *et al.* reported a case of acute orbital inflammatory syndrome following H1N1 immunization, which was successfully treated with oral steroids.^[8] On literature review, there is no reported case of preseptal and orbital cellulitis secondary to H1N1 infection.

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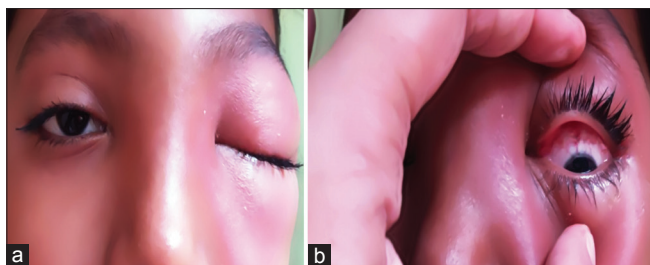


Figure 1: External photograph showing the swelling of the lids and fullness of the left orbit (a) and left superior conjunctival congestion on forced retraction of the lids (b)

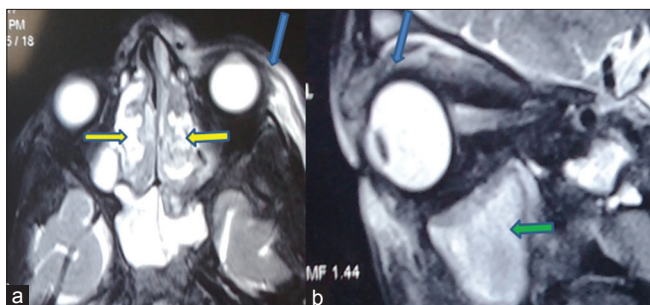


Figure 2: MRI orbit and paranasal sinuses axial (a) and coronal scan (b) showing ethmoid (yellow arrows) and maxillary sinusitis (green arrows) and left early superior orbital cellulitis involving superior rectus muscle (blue arrows)



Figure 3: External photograph showing reduction in periorbital and hemifacial swelling and hyperemia (a and b), 24 h after starting oseltamivir

Here, we report a case of H1N1 pneumonia causing pansinusitis, preseptal cellulitis, and subsequent early orbital cellulitis in a pediatric patient. There was no proptosis in this case; however, elevation was restricted and there were severe lid edema, conjunctival chemosis, and congestion, more in the superior fornix. MRI scan showed evidence of early involvement of superior orbit and superior rectus. The patient showed rapid response in the form of reduction in temperature, periorcular, and facial edema within 24 h of starting oral oseltamivir. The patient received intravenous paracetamol, but no systemic steroids (oral/intravenous) were given. The extraocular movements were completely regained with reduction in conjunctival congestion in 5 days. Antiviral therapy, when started within 48 h of onset of illness, has been shown to reduce the severity, duration of illness, and risk of complications.^[9] Oseltamivir, a sialic acid analog, restrains viral population, decreases viral load, and contains the infection by

blocking the neuraminidase function. It is taken orally and is absorbed from the gastrointestinal tract. It is a prodrug and its active ingredient is formed in the liver by the action of enzyme carboxyl esterase.^[10] In a patient with high-grade fever and pneumonia not responding to broad-spectrum antibiotics, the possibility of H1N1 infection should be kept in mind.

Conclusion

To conclude, H1N1 infections can present as orbital cellulitis and should be considered as a differential diagnosis in patients with high-grade fever and pneumonia. High clinical suspicion, prompt investigation, and treatment can help prevent sight and life-threatening complications such as cavernous sinus thrombosis, orbital compartment syndrome, compressive optic neuropathy, meningitis, and encephalitis in these patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Yen KG, Chilakapati CM, Coats DK. Ocular infectious diseases. In: Feigin RD, Cherry JD, editors. *Textbook of Pediatric Infectious Diseases*. Philadelphia, PA: Lippincott Williams and Wilkins; 2009.
2. Lee S, Yen MT. Management of preseptal and orbital cellulitis. *Saudi J Ophthalmol* 2011;25:21-9.
3. Lim BH, Mahmood TA. Influenza A H1N1 2009 (swine flu) and pregnancy. *J Obstetr Gynaecol India* 2011;61:386-93.
4. Cunha BA, Corbett M, Mickail N. Human parainfluenza virus type 3 (HPIV 3) viral community-acquired pneumonia (CAP) mimicking swine influenza (H1N1) during the swine flu pandemic. *Heart Lung* 2011;40:76-80.
5. Lai C, Chang Y, Li M, Chang C, Huang F, Tseng S. Acute anterior uveitis and optic neuritis as ocular complications of influenza A infection in an 11-year-old boy. *J Pediatr Ophthalmol Strabismus* 2011;48:30-3.
6. Rifkin L, Schaal S. H1N1-associated acute retinitis. *Ocul Immunol Inflamm* 2012;20:230-2.
7. Nakagawa H, Noma H, Kotake O, Motohashi R, Yasuda K, Shimura M. Optic neuritis and acute anterior uveitis associated with influenza A infection: A case report. *Int Med Case Rep J* 2017;10:1-5.
8. Belliveau MJ, Kratky V, Evans GA, Almeida DR, El-Defrawy S. Acute orbital inflammatory syndrome following H1N1 immunization. *Can J Ophthalmol* 2011;46:552-3.
9. Chudasama RK, Patel UV, Verma PB, Amin CD, Savaria D, Ninama R, *et al*. Clinico-epidemiological features of the hospitalized patients with 2009 pandemic influenza A (H1N1) virus infection in Saurashtra region, India (September, 2009 to February, 2010). *Lung India* 2011;28:11-6.
10. Gupta YK, Meenu M, Mohan P. The Tamiflu fiasco and lessons learnt. *Indian J Pharmacol* 2015;47:11-6.