

# Ocular Complications of Measles; A Case Series

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**Purpose:** To report case series of ocular complication in patients with measles and how to manage them.

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**Study Design:** Case series

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**Place and Duration of Study:** Abbasi Shaheed Hospital, Karachi. Winter Spring outbreak (January – April) 2016.

**Material and Method:** This is a case series of 9 patients who presented in an eye OPD with ocular complications of measles over a period of 2 months during spring break 2016. Their ages range between 7 months to 21-year-old. 7 patients presented with kerato conjunctivitis, 1 with keratomalacia and 1 with preseptal abscess.

**Result:** All the patients with keratoconjunctivitis responded to treatment and were 6/6. A seven-month old infant had keratomalacia and ended with leucoma in one eye. Another 1-year-old girl with preseptal cellulitis was treated with incision and drainage.

**Conclusion:** Keratitis is a common complication of measles which may lead to a serious complication like keratomalacia. Preseptal abscess is another rare complication to look out for.

**Key words:** Measles, ocular complications, keratoconjunctivitis, keratomalacia

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**W**orldwide measles is an important health problem which may affect almost all non-immune individuals in presence of an effective vaccine<sup>1</sup>. It is an acute and contagious disease characterized by fever and exanthematous infection. It follows a course of winter spring outbreak lasting 3 to 4 months every 2 to 5 years<sup>2</sup>. It is a disease with good prognosis in uncomplicated cases but with a high mortality rate in case of complications. Life threatening complications are otitis media (7 – 9%), pneumonia (1 – 6%), diarrhea (0.6%), post-infectious encephalitis (0.1%), sub-acute sclerosing panencephalitis (SSPE) (0.001%) and even death (0.1 – 0.3%)<sup>3</sup>. In third world countries its mortality rate is 3 to 5%<sup>4</sup> or may be 4 to 10%<sup>5</sup>.

Conjunctivitis accompanied with lacrimation and photophobia is experienced in its prodromal stage following fever, malaise, anorexia, cough and coryzia.

Measles induced keratitis, corneal ulceration and perforation have been described<sup>6</sup>. One of the study carried on 628 hospital admitted cases during measles outbreak noted ocular complication like keratitis, ulceration, perforation, and blindness in 7.3% of patients<sup>7</sup>. Measles complicated by meningitis and optic neuritis have also been reported<sup>8</sup>. We are reporting a case series of patients presenting with ocular complication of measles during winter spring outbreak (January – April) of 2016 in Abbasi Shaheed Hospital, a tertiary care hospital of Karachi. It will help us in understanding and managing its ocular complications. All the patients were diagnosed with measles based on clinical grounds and laboratory investigations.

**Case 1 – 7:** These 7 patients presented in eye OPD with complain of redness, watering, and photophobia. Age

of youngest patient was 3 years and oldest was 21 years. These complain started after 1 to 2 week of an acute stage of measles. Five patients had bilateral complains with one eye affected more than other. Two had unilateral disease and less severe. Their vision ranges between 6/18 to 6/9. They were examined on slit lamp. There was superficial punctate keratopathy with surrounding diffuse subepithelial infiltration. They had positive fluorescein staining but with normal corneal sensitivity. Anterior chamber, pupillary reactions, intraocular pressure, and fundus were normal in these patients. Diagnosis was made on history and clinical examination. They were treated with combination of topical mild steroid (loteprenolol) and antibiotic (tobramycin) along with artificial tears four times a day. They were followed up every week. All the patients except one were recovered in 2 weeks. One patient who was 21-year-old was completely recovered in 1 month. Complete recovery was labelled when cornea became transparent and visual acuity was regained to 6/6.

**CASE 8:** A seven-month old male infant was admitted in paediatrics department with pneumonia secondary to measles. The baby was malnourished. He was referred due to watering, lid edema and whitening of cornea. On examination right eye showed central corneal sloughing and left eye with lusterless cornea. Diagnosis of keratomalacia was made. He was prescribed topical antibiotics, cycloplegics and preservative free artificial tears in both eyes. He was also given oral vitamin A (200 000 IU) for 2 days along

with systemic treatment of pneumonia (IV ceftriaxone). The baby was closely followed up. But after 1-month right eye had developed leucoma and left eye was normal.

**Case 9:** Another 1-year-old female infant was also referred from pediatrics. She was admitted there due to measles but with normal weight. She had left lower lid abscess. It was around 3x4 cm, warm, tender and with pointing. Globe was normal. She was already on systemic antibiotics (ceftazidime) for 2 days. Lower lid abscess was drained next day under local anesthesia and packed with dressing. Specimen was sent for culture and sensitivity. It was negative perhaps due to previous use of antibiotics. The dressing was changed every day for 2 days. The baby responded well to systemic antibiotics and was discharged after 1 week on oral treatment.

## DISCUSSION

The complication of measles may affect and have been reported to affect every organ system. These complications are due to disruption of epithelial surfaces and immunosuppression<sup>9</sup>. Conjunctivitis is most commonly seen in persons suffering from measles followed by inflammation of cornea (keratitis)<sup>10</sup>.

Since most of the viral conjunctivitis presents intensely with injected conjunctiva, watery discharge, lid swelling, burning, itching or foreign body

**Table 1.** Distribution of different cases of Measles.

No	Age	Gender	Diagnosis	Outcome	Eye
1.	3 Years	M	Punctate Keratitis	6/6	R&L
2.	13 Year	M	Punctate Keratitis	6/6	L
3.	8 Year	M	Punctate Keratitis	6/6	R
4.	10 Year	F	R Punctate Keratitis	6/6	R&L
5.	21 Year	M	Punctate Keratitis	6/6	L>R
6.	15 Year	M	Punctate Keratitis	6/6	R>L
7.	7 Year	F	Punctate Keratitis	6/6	R>L
8.	1 Year	F	Lower Lid Abscess	6/6	L
9.	7 Months	M	R Corneal Sloughing L Luster Less Cornea	R Leucoma Adherent, Phthisis	R&L

sensation. Papillary and follicular hyperplasia of palpebral conjunctiva may be seen. In severe form of infections, keratitis, sub conjunctival hemorrhages, preauricular lymphadenopathy with sore throat, headache, fever, and upper respiratory tract infections may be seen<sup>11</sup>. Patients in our study presented with watery discharge and decreased vision when the acute symptoms have been resolved. Duration of developing keratitis was from 10 days to 2 weeks of acute symptoms. On examination all features of other viral conjunctivitis were absent. Clinical history and absence of other features makes clinical diagnosis easy. In one of the study 57% of the Turkish military personnel developed keratitis<sup>10</sup>.

In a well-nourished individual keratitis heals without residual damage. If complicated by secondary bacterial or viral infections can lead to scarring and blindness<sup>12</sup>. Since most of the patients with keratitis were healthy, immune competent and in young ages so they did not develop any serious complication. Measles along with vitamin A deficiency predisposes to severe form of keratitis followed by corneal dryness, ulceration, perforation, leucoma adherent and finally pthisis bulbi<sup>13,14</sup>. One of the infant in our case series had develop leucoma and blindness since the baby was malnourished with severe vitamin A deficiency. Measles with vitamin A deficiency is a lethal combination and is responsible for the most common cause of acquired blindness in children in developing countries<sup>15</sup>.

One of our patient presented with lower lid preseptal abscess. This complication is not documented in literature. It may be a coincidence that the child is suffering with measles and secondarily infected causing an abscess or may be due to immunosuppression. But on the other hand measles can affect any organ system<sup>9</sup>.

One of the rare ocular complication is measles associated optic neuritis. This demyelination is due to an autoimmune response rather than direct viral invasion. Its delayed onset after infection and relatively good visual prognosis favors an autoimmune mechanism<sup>16 17</sup>.

Diagnosis of measles is primarily based on clinical grounds and more accurately during an epidemic<sup>18</sup>. However, it can be confirmed by demonstrating measles IgM antibodies up to a month after infection<sup>19</sup>. IgG antibodies level peaks within four weeks than persists for many years after infection. Doubtful cases can undergo further confirmatory testing using

respiratory swabs or urine sample tested for measles real-time PCR, cell culture, conventional PCR, and genotyping<sup>20</sup>.

## CONCLUSION

Keratitis is a common complication of measles. It responds well to treatment without scarring in young, healthy, and immune competent individual. However, it may lead to a serious complication like keratomalacia especially in malnourished babies that may make them blind which needs longterm and expensive treatments. Preseptal abscess is one of a rare complication not mentioned in literature.

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