

## Case Report ● ● ● ●

# Peripheral ulcerative keratitis triggered by bacterial conjunctivitis

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### Abstract

**Background:** Peripheral ulcerative keratitis (PUK) is a disorder consisting of a crescent-shaped destructive inflammation of the perilimbal corneal stroma.

**Case:** We present a case of PUK following acute bacterial conjunctivitis in a 60-year-old lady with a history of on-and-off joint pain for two years. After admission to the hospital, she underwent conjunctival resection and was given topical and oral steroids. She was prescribed hydroxy-chloroquine after confirming the diagnosis of rheumatoid arthritis with a positive RA factor.

**Conclusion:** This report highlights the role of infection as a triggering agent in the induction of PUK in an otherwise quiescent cornea.

**Keywords:** conjunctivitis, peripheral ulcerative keratitis, rheumatoid arthritis

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### Introduction

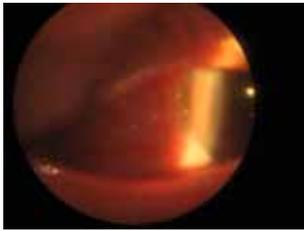
Peripheral ulcerative keratitis (PUK) is a potentially devastating disorder consisting of a crescent-shaped destructive inflammation at the margin of the corneal stroma that is associated with epithelial defect, few stromal inflammatory cells and progressive stromal degradation and thinning. It can quickly produce a progressive necrosis of the corneal stroma leading to perforation and blindness. PUK can occur in a variety of ocular and systemic conditions including infections, lid abnormalities, dermatological disorders and connective tissue disorders. Here we present a case where conjunctivitis played a key role in inducing PUK in a lady with a history of on-and-off joint pain.

### Case report

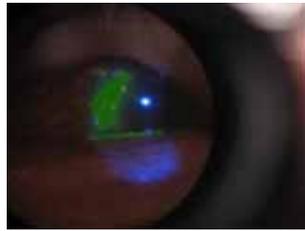
A 60-year-old female presented with complaints of redness, discharge and foreign-body sensation in her right eye for three days. She was non-diabetic and non-hypertensive but gave a history of joint pain

involving the wrist and finger joints on—and off since the last 2 years. On examination she had visual acuity of right eye 6/36 and of the left 1/60. The right eye had conjunctival congestion with discharge on the eyelids. The cornea was clear on both eyes. The anterior chamber was quiet and of normal depth in both the eyes. The right eye had nuclear sclerosis of grade II and the left had an advanced nuclear cataract. The fundus was normal in both eyes. She was started on flurbiprofen and ofloxacin drops along with ciprofloxacin ointment at night. After five days, she came with a worsening of the symptoms with pain on the same eye.

She had swollen joints of the wrists, fingers and also of the ankle joints of both limbs. On eye examination, she had ciliary congestion on the right side. On the temporal side she had a 4 mm by 1.4 mm ulcer extending from the 8 to 11 o'clock position. The ulcer was dry-looking and deep, involving up to the deep stroma. The ulcer bed was stained with a fluorescein stain. The margin of the ulcer was well defined with minimal infiltration. There was no scleral involvement. All these features pointed towards PUK.



*Dry-looking deep stromal infiltration*



*Fluorescein stain*

She was admitted to the hospital and started on topical steroid drops, tears substitute, oral indomethacin and cycloplegic atropine eye drops. Investigations of hemoglobin, total count, differential count, ESR, VDRL and chest X-ray were within normal limits. The rheumatoid factor was positive being  $>8$  IU/L. The ANA was negative. She was started on oral prednisolone 60 mg once a day along with antacids.

Consultation with the rheumatologist led to the diagnosis of rheumatoid arthritis and she was started on oral hydroxychloroquine.

Two days later, she underwent conjunctival resection along the ulcer margin up to 4 mm from the limbus. Then she was put on bandage soft contact lens (BSCL). She was discharged on request on the following day.

On follow-up after one week, her symptoms of pain and redness had decreased significantly. The ulcer had decreased in size, from 4 x 1.4 mm to 3 x 1 mm and was symptomatically better.

### Discussion

Peripheral ulcerative keratitis (PUK) is a disorder consisting of a crescent-shaped destructive inflammation of the perilimbal corneal stroma associated with epithelial defect and with stromal inflammatory cells resulting in progressive stromal degradation and thinning. It can occur in a variety of ocular and systemic conditions including infections, lid abnormalities, dermatological disorders and connective tissue disorders<sup>1</sup>.

Causes of PUK include: local infections by any microbe; systemic infections like Gonococcal infection, TB, bacillary dysentery, AIDS, syphilis; systemic non-infectious diseases like rheumatoid arthritis, systemic lupus erythematosus, periarteritis nodosa, Wegner's granulomatosis, sarcoidosis, rosacea,

leukemia, etc; and local non-infectious conditions like Mooren's ulcer. Among non-infectious diseases, rheumatoid arthritis is seen in about 34 % of PUK. The major pathophysiologic mechanism of PUK is the result of degradation and tissue necrosis of corneal stroma produced by degradative enzymes which are released primarily by neutrophils attracted into the area by diverse stimuli. Likewise vaso-occlusive changes are prominent in the episclera adjacent to the site of PUK and histologically, there is an inflammatory micro-angiopathy of the episclera and conjunctival vasculature. Different studies have shown that various triggering factors induce PUK in an otherwise normal eye. Surgical procedures like trabeculectomy had led to the development of PUK in young patients with rheumatoid arthritis (RA). Similarly, PUK has been reported after six months of undergoing pterygium surgery. A cellular and humoral response to corneal antigens has been demonstrated in these patients.

PUK was also seen after Penetrating Keratoplasty (PK); on the first postoperative day after the laser in situ keratomileusis (LASIK) and in patients undergoing radial keratotomy indicating surgery as a triggering agent in the induction of PUK. Sainz et al found that patients with peripheral keratopathy were 4.8 times more likely to have had previous ocular surgery. In particular, PUK was significantly associated with previous ocular surgery in 58.3 % .

However, to our knowledge, till date conjunctivitis has not been reported as a triggering factor in the induction of PUK in a patient with rheumatoid arthritis.

### Conclusion

Different studies have reported ocular surgery as playing a triggering effect in the induction of PUK. However, till date, conjunctivitis has not been reported as a triggering factor of PUK in a rheumatoid arthritis patient. This case underlines the possibility of such association.

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