RCA STUDY ON RARE CASES OF OCULAR RHINOSPORDIOSIS IN
SAURASHTRA REGION WITH POSSIBLE MODE OF INTERVENTIOS
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ABSTRACT
Rhinospordiosis has a global distribution with majority of cases occurring in India and Sri Lanka with a predominance in the coastal areas. In India, it is most commonly occurring in Chhattisgarh, Kerala, Tamilnadu, Orrisa and some parts of West Bengal. But it is rare in Gujarat. Most common sites of infection are Nose and Nasopharynx (70%) followed by Eye (15%), other Mucosal area (8%) or very rarely Cutaneous site. Three patients from Saurashtra region (1 patient from village “Than” and 2 patients from “Wakaner” Gujarat state) which are away from sea coast, presented to the Ophthalmology OPD with complaints of defective vision, irritation, reddish eye and foreign body sensation in the eye. On examination a small nodule was felt in the upper eye lid of the right eye in one of the patient and lower eye lid of left eye in rest two patients. Biopsy was taken from the masses and sent to histopathology department which were later on diagnosed as cases of Ocular Rhinospordiosis. RCA study was done to know about the possible causes-reasons of occurring of the disease and the actions have been suggested to get prevention from the occurrence of the rare disease of Rhinospordiosis.

Keywords: Rhinospordiosis, Palpebral Conjuctiva, RCA study

INTRODUCTION
India and Ceylon are endemic countries for Rhinospordiosis.1,2,3,4 A number of cases reported particularly from the United States, puts Northern America also on the geographical map of Rhinospordiosis.5 Rhinospordiosis, a chronic granulomatous condition was originally thought to be due to a protozoon, but later it was found to be caused by the fungus "Rhinospordium" the cultivation of which has not been possible.6 The fungus originally seen by Malbran in 1812 was described by Seeber in 1900 and named by Ashworth in 1923 as "Rhinospordiosis Seeberi". From India O’Kinely reported the first case in 1903.5 The fungus was originally thought to affect the mucous membrane of the nose but it is now known that Rhinospordiosis at times may affect structures like ocular tissue, lips, skin, rectum, urethra, nasopharynx and larynx.

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Certain cases are on record where the involvement has been generalized. Rajam et. al. (1955) reported one case with visceral involvement. Agarwal et al (1959) have reported a case of Generalized Rhinospordiosis.5 Certain cases of ocular involvement have been reported by various authors and sporadic reports are seen appearing in literature. The case reported by Agarwal et al (1959) of Generalized Rhinospordiosis showed ocular involvement. In 1958 Sharma et al, reported a case of ocular involvement with Rhinospordiosis which was presented as a tumour like appearance of the eye lids. Sharma et al (1962) have reported 4 cases of ocular involvement in their series of 57 cases. Shrinivas Rao (1962) has reported a case of ocular involvement with Rhinospordiosis. Sengupta et al (1958) have reported two cases of Rhinospordiosis of papebral conjunctivae. Ocular involvement is more common in papebral conjunctivae than bulbar conjunctivae.6,8 In present communication, we present three cases of Rhinospordiosis showing involvement of palpebral conjunctivae.
CASE REPORT
In 2009 one 25 yrs male patient from village-Than (Dist-Rajkot) and also in 2010 two patients of 19 yrs and another of 15 yrs were attended at the ophthalmic outpatient department (OPD) complaining of defective vision, irritation, reddish eyes and foreign body sensation in eyes. The total duration of symptoms was 5 -7 months in all of three cases. The 25 yrs old was a worker in a ceramic factory and rest two patients were students. No other history was of any significance. On examination a small nodule was felt in the upper eye lid of the right eye in one of the patient and lower eye lid of left eye in rest two patients. The conjunctival surface showed an ulcerated, rather fungating nodule about a 1/2 to 1 cm. in diameter. A clinical diagnosis of chalazion was made. A piece of the fungating growth measuring about 3 mm. in size was excised and sent for Histopathological study. Postoperative period was uneventful.

PATHOLOGY

Gross
The polyps from conjunctival infection are flattened, soft, reddish-pink to dark red and less lobulated. Minute opaque spherules are also readily visible.6,12,13,14

Histopathology
The layer of transitional epithelium are often invaginated to become flask shaped and many form pseudocysts. Such areas contain spores, pus and mucus material. The epithelium is generally hyperplastic or may be quite thinned out with mature sporangia beneath the thinned areas. The major portion of the growth consists of very vascular, fibromyxomatous connective tissue in which the parasites are found in various stage of development(Figure.1). The cellular infiltrate consists of plasma cell, neutrophils, histiocytes and lymphocytes.13

Morphology
Ashworth has worked out the structure and life history of the organism in detail.15 The causal agent is fungus “Rhinospordium Seeberi”. The mature spores, 8-9 microns in diameter are contained in sporangia which may reach a size of 300 microns that contains 4000 nuclei which form 16000 spores. (Figure.2). The mature parasite called Sporangium, now presents a double contoured chitinous envelope with a germinal spore through which the spores discharge. Each spore subsequently develops into separate sporangium. The fully developed sporangium on the surface of the lesion is seen as a pinhead sized slightly elevated yellowish pink nodule. Many such on the surface give the lesion a strawberry like appearance which is very characteristic. Rupture of the sporangium produces seeding of the spores into the tissues and these spread by lymphatics.16

DISCUSSION
Rhinospordiosis which is endemic in India is more common in South India and eastern provinces in the deltas of big rivers. In Madhya Pradesh it is more common in the Chhatissgarh division. It is probably because of moist climate and poor hygienic conditions. In central India (Bhopal area) Rhinospordiosis is comparatively less common.15 Rhinospordiosis is also very much less common in Gujarat, especially in the areas away from the coast. The case we presented came from the village-Than and Wakaner which are totally away from the sea coast. The fungus is found in the soil. Direct human infection from the soil is probably rare, as the incidence in children is much less than in adults. The reservoir of infection is probably more in horses and cattle. The site of lesion in them is in the anterior naries, where the anchoring rope produces abrasions and provides a foothold for the fungus. The mode of transmission to man is not clear. The generally accepted view is that infection occurs in people who bathe in ponds, the water of which has been contaminated by cattle with the disease. Direct man to man transmission is practically unknown.14 The main sites of infection in man are the nose, nasopharynx, conjunctiva, lacrimal sac and larynx. Other mucous membranes are not exempt. Rarely the organism may be widely disseminated in the body.14 Ocular involvement is an uncommon sequel. In the eye, conjunctivae, lacrimal sac, eye lids and the sclera are the structures involved. Ocular involvement constitutes approximately 15% incidence in rhinosporidiosis.13 Here the patient was working in a ceramic factory, that explains possible mode of infection is from the soil used in the factory. In remaining two cases, possible mode of infection may be of bathing in pond water in direct contamination with their...
domestic cattle. On the basis of above discussion, RCA study, Cause – effect analysis tool has applied to provide a systematic way of looking at effects and the causes that create or contribute to those effects and further help us to also find out the robust solutions and some necessary actions while against to spread of infection. (Figure-3)

**CONCLUSION**
Three cases of Rhinosporidiosis of palpebral conjunctivae which are very much less common in Gujarat are presented. RCA study was done on these cases to find the root causes, so that recommended necessary actions (Figure-4) should be taken to reduce the prevalence of the fungal infection and its complications.

**Figure 1:** H & E section, Spores of Rhinosporidiosis with 40x thinned out epithelium, 10x

**Figure 2:** H & E section, Spores of Rhinosporidiosis,

**Figure 4:** Recommended Actions

- Increased Utilization of Health Services & Resources.
- Improved Health (Reducing the risk of Rhinosporidiosis)
- Increased Cure Rate
- Improved lifestyle & Hygiene Conditions.
- Provide Awareness (Information, Education & Communication)
Figure 3: RCA Study (Fishbone Diagram)

REFERENCES
4. Wright, (1922), Ind. Med. Gaz., 567, 81