A Clinical Study of Local Acriflavin in Treatment of Rhinoscleroma

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Abstract

Rhinoscleroma is a chronic granulomatous disease which involves upper respiratory tract. We undertook this study to find out the antibacterial effect of local acriflavin on *Klebsiella rhinoscleromatis*, as well as the disease rhinoscleroma. Antibiotic effect of acriflavin was studied on one of the isolate of *Klebsiella rhinoscleromatis* using whatman No.1 filter paper disc soaked in 2% and 5% acriflavin solution and was found sensitive. A total of 26 cases diagnosed clinically and histopathologically were studied. These patients were treated using 1%, 2% and 5% acriflavin ointment. The cure was 33%, 67% and 100% respectively. Details of response to acriflavin therapy and its adverse effect will be discussed. It is concluded that acriflavin can be used as a good alternative to systemic therapy for rhinoscleroma. As it can be prepared and applied easily and is not a financial burden on already poor patient.

Key Words

Rhinoscleroma, Therapy, Acriflavin, Scleroma.

Rhinoscleroma is a chronic granulomatous disease involving upper respiratory tract caused by *Klebsiella rhinoscleromatis*. Historically, disease was first diagnosed in 1870 by Von Hebra. He also coined the term Rhinoscleroma (Rhino-nose; Scleroma-hard). Frisch in 1877, discovered the bacilli *Klebsiella rhinoscleromatis* which was named after him. Following this disease was reported in many countries world all over. Eastern Europe, North and central Africa, Southern Asia, Middle East and central America. Rhinoscleroma is endemic in Egypt. Rhinoscleroma is more common in people belonging to low economic strata and living in unsanitary condition. Thus this disease is also known as the Disease of Great Unwashed¹. In India, it is endemic in Madhya Pradesh, Uttar Pradesh, Rajasthan and above an imaginary line joining Bombay and Vishakhapatnam². Granuloma formed results in deformity and disfigurement. Some times cicatric stenosis of airway may results in the death of the patients. Frisch bacilli or *Klebsiella rhinoscleromatis* is a coil form Gram Negative bacilli which have

mucopolysaccharide capsule, This capsule protects the bacilli from antibiotics and host antibodies³.

All the available therapeutic modalities including chemicals, radiation, surgery and antibiotics were tried in hope to cure the disease⁴. Many antibiotics including streptomycin, chloromycetin, tetracycline⁵, cephalosporins⁶, ceforizanide⁷, clofazimin⁸ and recently Rifampcin^{9,10} has been tried. Cure rate achieved was high with some of the antibiotics but they also have high recurrence rate. Also all these drugs are required to be given for long duration and carried their own side effects beside being costly. This requires continuous monitoring of patients and thus add to the cost of treatment. This restricted their use in already poor patient. We undertook this study in search of a long standing, cost effective and safe remedy for Rhinoscleroma.

Materials and Methods

This study was undertaken at Department of Otorhinolaryngology, G.R. Medical College and Jaya Arogya Group of Hospitals, Gwalior, where about 26

cases in different stages of Rhinoscleroma were studied. Detail history was taken and comprehensive clinical examination was done. Diagnosis was confirmed by excision biopsy and histopathological examination.

These cases of Rhinoscleroma were given acriflavin ointment in the concentration of 1%, 2% and 5%. Acriflavin was locally applied for about 8 weeks. During this period serial histopathological sections were also studied. After regression of disease patients were followed up to 6 months clinically as well as histopathologically. Cases which showed poor response were also given acriflavin for 4 weeks more.

Acriflavin is orange coloured compound which belongs to acridine family of antiseptic agents. This is used by surgeons for bladder washing and cleaning of abscess cavities. Also microbiologist used acriflavin for study of malaria parasites.

Observation

In this study 26 diagnosed cases belonging to age group of 19 to 60 years of age were taken. Male preponderance was seen with 20 of the 26 cases belonging to male sex. All the cases belong to low socio-economic status and inhabited in poor sanitary conditions. Out of 26 cases, 2 were in atrophic stage and 10 were in granulomatous stage. Involvement of upper lip was seen in 2 cases while 1 had granuloma over cheek without any sign of nasal involvement. In two cases, even cicatrization of pharyngeal and nasopharyngeal mucosa was seen. One case had dyspnoea due to laryngeal stenosis and required tracheostomy (Table I).

Table I			
Disease Stages			
Total Cases :			26
Male :			20 (76.92%)
Female :			06 (23.08%)
No.	Stage of Rhinoscleroma	No.	Percent
1.	Atrophic Stage	2	7.70
2.	Granular Stage	10*	38.46
3.	Cicatric Stage	14	53.84
Total		26	100

* One case had scleroma nodule on the left cheek only.

Results

Acriflavin, an antiseptic, was used in the form of lotion for local application (Table II). On follow up one percentage acriflavin was found to be useful on atrophic stage with partial response seen in cases with granulomas. These cases were then given 2 percent acriflavin.

Table II			
Treatment Given			
Acriflavin	Atrophic	Granular	Cicatric
1% Acriflavin	2 (7.7%)	4 (15%)	—
2% Acriflavin	—	10 (38%)	10 (38%)
5% Acriflavin	—	—	06 (23%)
Total	2	14	16

Two percent acriflavin was given to 20 cases in all. Of which 4 cases received one percent acriflavin and two cases 5% acriflavin for 2 weeks. After therapy of 8 weeks 14 cases showed total regression of disease and 3 cases showed partial regression of disease and required prolonged therapy (Table III).

Six cases of cicatric stage received 5% acriflavin and showed good response. Two of these cases complaint of excessive burning, crusting and bleeding per nose. These cases though showing good response were changed to two percent acriflavin. Remaining 4 cases got cured with 5% acriflavin. In two cases with extensive cicatrization, surgical excision was also performed prior to acriflavin therapy. One case expired during 4th week of the course of treatment. While two cases after 5th and 7th week of treatment didn't turn up for follow up and thus all three were categorily kept in cases showing partial response. On six month of follow up none of the case showed recurrence. The 3 cases which showed partial response, on continuation of therapy for another 4 weeks got cured and on follow up showed no recurrence. Over all cure rate after 8 weeks of therapy was 77.78% with 11% showing partial response, while cure rate was 100% after 12 weeks excluding cases lost during follow up.

Discussion

Treatment of scleroma has always been an enigma for otolaryngologists. Where search for long lasting, cost effective therapy is still going on. Every available

Table III
Response to Treatment

Acriflavin Ointment	No. Of Cases	Cured	Partially Cured	No Response
1% Acriflavin	6 (23%)	2 (33%)	4* (67%)	—
2% Acriflavin	20 (77%)	14 (70%)	6 (30%)	—
5% Acriflavin	6 (23%)	6 (100%)	—	—
Total	32	22 ***	10	

* Changed to 2% acriflavin due to poor response seen in 4 weeks.

** Two cases receiving 5% acriflavin complained of burning in nose, bleeding and excessive crusting thus changed to 2 percent acriflavin.

*** Cure rate 77%, with 1% – 33% , with 2%-70% & with 5%-100%.

therapeutic modality in medical science ranging from age old chemical cauterization to surgical excision radiotherapy and even latest LASER has been tried in an attempt to cure this disease. However the present modalities were found not to be very successful and were also associated with side effects, because of which these can not be used regularly. Antibiotic though are found to be most effective regime against the scleroma but like the disease itself requires prolong therapy. This is neither affordable to poor patients nor free from side effects. Also recurrence rate found to be high following antibiotic treatment. With systemic therapy compliance rate is not very good in India where illiteracy and low socioeconomic status of patients has its own toll. Similarly use of irradiation though found successful was not advocated due to its associated side effects.

Local chemotherapeutic agents had been used with high efficacy in many diseases. This modality had minimal side effects associated with them. Recently Gamea A.M. (1990) used local rifampcin in the form of instillation and drops following use of systemic rifampcin successfully. With local rifampcin they achieved 70% cure rate in atrophic cases and 50% of granulomatous cases. Gamea and Tatawi (1990) compared the effect of local and systemic rifampcin on cases of Rhinoscleroma and found local rifampcin as good as systemic rifampcin. In 1992 they used 2% rifampcin ointment and achieved 48% cure rate. We in search of good local chemotherapeutic agent without any side effects and with maximal efficacy, found acriflavin, an antiseptic used by surgeons for urinary bladder wash prior to surgery. Shaer et al (1981) first used acriflavin and achieved good results

(about 96% cure rate) and no recurrence in their one year follow up. Which on comparison with local rifampcin found to be highly effective and economic. In our study we achieved 100% cure rate with 5% acriflavin and about 80% with 2% acriflavin in eight weeks. The success rate achieved increased with duration of drug application in resistant cases. In our follow up of 6 months, we didn't found any recurrence clinically as well as histopathologically. On the basis of this study, it can be stated that only cases who came with marked cicatrization showed poor response to therapy. However if acriflavin is applied locally after excision of cicatric tissue; greater cure rate could be achieved as seen in 2 of the cicatric cases.

Cure rate with acriflavin would have been much better, if 2 cases which were lost during follow up could have been followed up properly as they were showing good response to treatment. Similarly one case who expired during the treatment course also showed good response. This resulted in overall drop in cure rate of our study. We also performed antibiogram of the *Klebsiella rhinoscleromatis* by using antibiotics and 5% & 2% acriflavin. We found good response with acriflavin, rifampcin cephalixin and ciprofloxacin, moderate response with streptomycin, tetracycline and co-trimoxazole.

In last, it can be concluded that though there are not much research work done in this subject, we still can encourage use of local acriflavin in treatment of Rhinoscleroma. As it is safe, economic, can be prepared easily and also application is easy. Thus patients compliance rate will be high with local acriflavin.

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