Local Application of 20% Silver Nitrate (AgNo3) for the Treatment of Allergic Rhinitis

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Allergic Rhinitis is a very prevalent disease. There are various methods for the treatment of allergic rhinitis. In our study of 100 patients of allergic rhinitis, we applied 20 percent Silver Nitrate cautery on the anterior end of both the inferior turbinates and adjacent area of the nasal spetum 1cm sq at each side. In this method, we actually cauterized the "TRIGGER AREA". This area is very sensitive and excitable, stimulation of which may leads to an acute attack of allergic rhinitis. Cautery of the "TRIGGER AREA" with 20 percent Silver Nitrate reduces the sensitivity and excitability of this area and thus relief is obtained. We selected 100 patients of allergic rhinitis and divided them into male and female groups. The patients age ranged from 16 to 50 years. There were also two children of age 10 and 12 years. The disease was having female predominance. We selected only those cases who had sneezing, rhinorrhoea, post nasal drip and nasal obstruction as presenting symptoms. Each patient was assessed by history, examination and available investigations. Investigations like skin tests, nasal provocation tests, Plasma radio-immunosorbent test (PRIST), Plasma radioallergosorbant tests (RAST) and pulmonary function tests were not performed because facility for these tests were not available at our center and most of the patients could not afford it. It is an out door procedure. In each patient we did four applications at 1 week interval after anaesthetizing the area with topical 4 percent xylocaine solution. After completing the study on 100 patients, we found out that success rate was 94 percent, 85 patients out of 100 got good relief, 09 patient got fair relief and 6 patients did not report back. So we concluded that treatment is easy and effective in relieving symptoms. It can be easily repeated if symptoms recur and side effects are negligible, as compared to other procedures.
Key words: Allergic rhinitis, silver nitrate, sneezing

Allergic Rhinitis is a common disease in our country. Symptoms characteristic of allergic rhinitis can occur, due to the hyperactivity of the nasal mucosa to endogenous or exogenous stimulants[1]. Moreover allergic and a non allergic mechanisms often act in conjunction perennial rhinitis in particular, is seldom 100% allergic or non allergic, thus a vicious circle is established[2].

Allergy has been known to man since earliest time and Allergic Rhinitis in young and middle, aged adults exceed other ailments seen in EAR, NOSE AND THROAT clinic now-a-days.

There are many reports in literature about the treatment of Allergic Rhinitis but none of the methods used is without side effects and none of them is ideal for all patients. These methods are hyposensitization, drugs or certain surgical procedures. Hyposensitization is probably the treatment of choice in hay fever conditions, while in perennial rhinitis, it is unlikely to help.

Gill[3] recommended intraturbinal steroid injection for those patients suffering from bouts of severe sneezing, persistent watery rhinorrhoea and marked nasal obstruction. He reported good and often prolonged relief of nasal obstruction. Many patients are reluctant to have such injection. Weir[4] used transnasal zinc ionization to control the symptoms of allergic rhinitis, but it gave improvement only in nasal obstruction, there was no change in outer symptoms.

Ozenberger[5] used cryotherapy to control the symptoms of allergic rhinitis. Nasal obstruction was improved much but other symptoms persisted. Capel and Mckelivie[6] showed in their study that some patients were much improved by disodium chromoglycate insufflation. The role of disodium chromoglycate to control allergic rhinitis is preventive, but the duration of its effect is short. Systemic corticosteroids are not suitable for long term maintenance therapy but are very useful as a short term course to bring the symptoms under control. Systemic Steroids, though effective have potentially severe side effects and topical steroids give some improvement in some patients[7]. Topical steroids have now largely replaced systemic steroids but the absorption of active steroids from the nasal mucosa can not be excluded and therefore long term use of topical steroids is not advisable.

Antihistamines in a dosage adequate to control symptoms are often too expensive to be accepted, while Nasal Decongestants provide short term relief and frequently cause severe rebound nasal congestion[8]. The old practice of reducing the irritability of the throat by painting it with dilute solution of Silver Nitrate was the basis for the new method of treating cases of rhinitis with rhinorrhoea and sneezing. In this study, we used silver nitrate for local application in 20% concentration. It can be used in lower and higher concentrations but it is very much effective and accepted to the patient in 20% concentration.

Material and methods:

This study was conducted in the ENT Unit – I of Services and Jinnah Hospital, Lahore. In Services Hospital from November 1994 to November 1995 and in Jinnah Hospital

from December 1995 to March 1996. Each unit consists of 30 beds.

This study consists of 100 patients who reported in the out-patient clinics of the said units. Only those cases were selected who were sneezing more than 30 times a day during an attack along with other symptoms like rhinorrhoea, irritation, and nasal obstruction, i.e., typical cases of allergic rhinitis. So, we divided the response of the patients into three Groups after treatment.

Good = Less than five sneezes during an attack.
Fair = More than five less than 10 sneezes
Poor = More than 10 sneezes

Patients of Allergic Rhinitis selected for this study were further divided into male and female. All patients were treated as out patient. Each patient was assessed clinically and a detailed history, thorough ENT and systemic examination and available investigations were carried out. Information obtained from the history, examination and investigations were recorded in each case.

We used swab sticks dipped in 20 percent silver nitrate solution. Local chemical cautery was performed on the anterior part of the inferior turbinate and the corresponding portion of the anterior part of the nasal spetum, over an area of roughly 1 cm at each side. The procedure was then repeated on the other side, the area to be cauterized was first anaesthetized by carrying out nasal packing soaked in 4 percent xylocaine, 20 minutes before application of the solutions. Local anesthesia was used to reduce the sneezing and rhinorrhea which occurred in sensitive patients immediately after the application of the chemical. All patients had an application of 20 percent ilver Nitrate once a week, repeated for four weeks. During this therapy, no antihistamines were permitted except in a few cases who were very much sensitive, giving one day treatment only with antihistamine after the application as the real effect of treatment would thus be masked . however, a single tablet of antihistamine was permitted one hour before the application of Silver Nitrate to minimize the nasal irritation. The application was not done if the patients were actively suffering from upper respiratory tract infection as application was in the danger of getting washed out. Solution of Silver nitrate older than 2 months are not recommended.

For follow up, patient were advised to report at one month interval for six months, and then two months interval for next six months, for a total of one year follow up.

Results:

All the patients presented in out patients Department of ENT unit-I Services Hospital and Jinnah Hospital, Lahore. Patient did not present with just one symptom, but there was a combination of symptoms, like sneezing, rhinorrhoea, nasal obstruction and post nasal drip. The patient were Grouped on the basis of their major presenting symptom.

Patients presented with sneezing as a dominant symptom. They were sneezing more than 30 times a day during an attack along with other symptoms like rhinorrhoea, irritation and nasal obstruction (60 percent). Patients presented with rhinorrhoea and irritation (30 percent). Patients presented with nasal obstruction of either side or both (4%). Nasal patency was assessed clinically before and after the treatment with the help of Spatula or cotton. Patients presented with symptom of post-nasal drip (3%). Two patients (2%) were having complains of ear blockage of either one or both sides. One patient complains of Bronchial asthma (1%).

Age and sex incidence shows a female predominance. Fifty three female patients presented to us with age ranging from 18 years to 40 years and average age was 25 years. Males were 45, average age being 30 years. Age range was from 16 years to 50 years. Only 2 children of age 10 years and 12 years were treated.

Out of 100 cases (20%) presented to us with typical history of Hay fever or seasonal allergic rhinitis. Symptoms appear in or around a particular season when the pollens of a particular plant to which the patient was sensitive, were present in the air. Eighty cases (80%) had no seasonal history, so, they were labeled as non seasonal or perennial allergic rhinitis. This form of allergy is very commonly met with. It may be due to allergy to many allergens,, there is no seasonal incidence.

Allergens were suspected on the basis of detailed history but not doing allergic test, because facility were not available at our Hospitals and most of the patients were non-affording.

The main allergens were house dust in sixty six patients (66%) and pollen of grass hay and flowers in twenty cases (20%). Two cases (2%) were allergic to animal dander like horse, dog and cat fur. Emanation from the cleaning of fabric of furniture, Rugs or carpets etc. three patients (3%). Scents or perfumes five cases (5%) and finally husk, when it is being sifted from wheat flour in four cases (4%).

Thorough general physical examination and systemic examination was done especially to look for any pre-existing allergic ailment like bronchial asthma, chronic obstructive lung disease (C.O.P.D).

Examination of ear nose and throat was done in all cases. In nasal examination, on anterior rhinoscopy twenty eight patients (28%) had slight deflected nasal septum (DNS) to either side with unilateral inferior turbinate hypertrophy. Thirty cases (30%) had straight nasal septum with normal sized inferior turbinate and forty two patients (42%) had straight nasal septum with slight hypertrophy of both inferior turbinate. Thirty six patients (36%) had no change of colour of nasal mucosa. Thirty five patients (35%) had blue or deep violet colour more prominent on inferior turbinate and twenty nine cases (29%) had pale nasal mucosa all around.

On posterior rhinoscopy nothing significant was visible except in two patients (2%) in which there was mulberry hypertrophy of posterior ends of inferior turbinates.

On throat examination forty eight patients (48%) were having granules on posterior pharyngeal wall and lateral bands on both sides behind the posterior transillar pillars. All of the these patients were also having postnasal drip along with others presenting symptoms.

In ear examination, nothing abnormal was visible, except twenty cases (20%) were having retracted tympanic membrane, on either one or both sides. These patients were having blockage of ears as a presenting complaint along with other dominating symptoms.

On investigation total leucocyte count (TLC) and eosinophie count were done in 100 cases. The average total leucocyte count were 7500 ranging from 5000 to 10000. For eosinophil count, average was 3.5 ranging from 03 to 07. Eosinophils were present in the nasal secretion of Forty seven patients (47%). Intestinal parasites were detected in 10.5% of cases. These cases were included in this series as they continued to have symptoms in spite of eradication of intestinal parasites for treatment of eosinophilia.

X-ray paranasal sinuses 45 degree (occipito – mental) water's view was performed in all cases to see any preexisting sinus infection. Seventy four (74%) had clear maxillary sinuses on both sides. So, they were treated as such, twenty one patient (21%) had unilateral haziness. Such patients were treated for maxillary sinusitis, first conservatively, and if not improved, they surgically by carrying out antral wash out of the diseased sinuses.

When the disease had been cleared both clinically as well as radiologically, only then these patients proceeded for the treatment of allergic rhinitis with 20% $AgNO_3$.

X-ray chest Postero anterior view was performed only in those cases who were having history of allergic induced asthma or any history of preexisting chest diseases, like tuberculosis and bronchiectasis.

Out of 100 Patient who underwent this procedure only 50 patients (50%) developed sneezing, irritation and pain during the first application. During the second application 10 patients (10%) developed sneezing, irritation and pain. Chemical trauma lead to oedema of the nasal mucosa but there was no nasal blockage and slough formation during the second application, 60 patients (60%) developed negligible bleeding, which was settled after 10-15 minutes. During third and fourth applications only 08 patients (8%) developed sneezing, irritation and pain. No body complained of nasal obstruction and there was no slough formation. After the completion of four application, there was no pigmentation of gums and level of methaemoglobin was less than one gram percent.

Good relief from presenting symptoms occurred in 85% of patients, they were sneezing less than 05 times. Nine patients (09%) were making fair relief. They were sneezing more than five (05) but less than 10-times, during an attack. Six did not report back.

I. 85 patients (85%) = good
II. 09 patients (9%) = Fair

So, a total of 94 patients (94%) got cured. Recurrence rate after the completion of therapy was very rare. Only 8 patients (8%) came back with same complaints during the follow up period so again single application of 20% Silver nitrate was done. The rest of the patients remained symptoms free for one year because we did follow up only for one year.

Discussion:

Various types, of treatments of allergic rhinitis have followed each other but none of them has established itself as the treatment of choice[4]. So the availability of an effective treatment, free from side effects was highly desirable.

First type of treatment is the avoidance of the allergens, but it is not possible and may lead to emotional problems which do not help the state of the nose[9]. The second type of treatment is hyposenitization but in perennial rhinitis the results are very disappointing. The detection of the responsible allergen in this common condition may be very ifficult[10]. Taylor and Shivalkar 1971[11] have proved that there is not quantitative relationship between the degree of skin sensitivity and the degree of nasal sensitivity to an allergen. More over skin tests carry a risk of anaphylaxis, so they are not so commonly used.

Antihistamines have a good effect in symptomatic treatment of allergic rhinitis. But most of the patients develop drowsiness or dizziness after taking these. Now most of the pharmaceutical companies are claiming that there antihistamines are non sedating but it does have sedating effect on some patients. 5% do cross blood brain barrier so they cause sedation. So there is a lot of variation in the sedating and non sedating effects of the antihistamines. Antihistamines like terfanadine are cardio toxic. Vidian neurectomy has been advised only in those patients, who severe rhinorrhoea and sneezing were not responding to medical and surgical treatment[12] but this treatment also has complications.

Earlier, various local treatments have been described in allergic and vasomotor. Rhinitis. Zinc ionization was used by Weir[4] for Vasomotor rhinitis, with improvement in 73% of patients, and Puhakka and Pantenew[13] used cryotherapy for allergic and vasomotor rhinitis, with good results in 76% of cases, but in both series blockage of the nose and rhinorrhoea were the presenting symptoms. Ozenberger[5] reported that cryo surgery of the inferior turbinate gave improvement in the nasal obstruction, but often there was no change in sneezing or rhinorrhoea.

Gill[3] injected hydrocortisone intra-nasally, with success in 84% of cases. Sneezing was a dominating symptom in this series. In the hands of the authors. This

treatment has given good results with relief lasting for a month or more but many patients do not agree for having intranasal injection, as the very idea of injections in the nose frightens them. In case it goes into one of the large sinusoidal veins it can lead to cavernous sinus thrombosis and blindness.

The topical application of disodium chromoglycate gives good relief as a preventive but the effect is short lived[14]. Similarly the topical use of steroids as an aerosol gives only temporary relief [15].

Thomson and Negus[16] had mentioned the use of pure Phenol and Trichloracetic acid for surface application on inferior turbinate for allergic rhinitis, but they condemned their destructive action with loss of delicate epithelium and its replacement by scar tissue.

In 1980[17] Bhargave reported that cautery of the anterior portion of both inferior turbinate and the nasal septum with 15% Silver Nitrate was a simple and effective treatment for allergic and vasomotor rhinitis. It was readily accepted by the patient. It involved neither an operation nor any sophisticated equipment. Best relief was obtained from sneezing and rhinorrhoea, the symptoms, which exhausted the patient and upset the relatives, friends and neighbors. In the event of recurrence, treatment could be repeated without difficulty. Histopathology of the inferior turbinate after application of Silver Nitrate showed a normal columnar epithelium and a few mucous glands. The inflammatory exudates was scanty with a conspicuous absence of eosinnophils. There was vascular proliferation and mild fibrosis due to the action of Silver Nitrate. This concentration need more application so, patient has to do frequent visits which exust them.

Glavano cautery is also used in allergic rhinitis[18]. It is applied on the septal surface of the inferior turbinate it also reduce the size of the inferior turbinate but this procedure has lot of disadvantages and complications. Silver nitrate produces a local astringent action by coagulating albumin[19].

In our study we used locally 20% silver nitrate for the treatment of allergic Rhinitis. Because silver nitrate in this concentration is very effective, free of side effect and easily acceptable to the patients it requires less application as compared to other concentration like 15% silver nitrate.

It can be use in high concentration like 25% but it is more irritant and not acceptable to the patients and have few side effects.

Conclusion:

After completing the study on 100 patients of Allergic Rhinitis, we concluded that, it is an out-door procedure, no active bleeding occurred while doing application. Treatment is easy and yet effective in relieving symptoms. Airway remained clear during the procedure. It can be easily repeated if symptoms recur. Side effects are negligible as compared to other procedure. In this procedure no sophisticated equipments or surgery is required. Patient readily accept the treatment as they do not mind the application of a medicine in the nose.

Post-operative recovery and response of treatment is immediate. No medication required, except in few sensitive patients who need only one day treatment with oral anti-histaimine. Effect last much longer duration as compared to other procedure because our patients remained symptoms free for a period of one year. We did follow up as one month interval for six months and two months interval for another six months. So total period of one year. This procedure is also suitable for co-operative children because it is easily acceptable.

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