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Original Research Article

Role of Cryosurgery in Allergic Rhinitis- A Study of 50 Cases

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ABSTRACT
Allergic rhinitis is one of the commonest diseases that otolaryngologist treat. Aims and objectives; 1.To evaluate the role of cryo surgery as one of the alternative modalities in management of chronic allergic rhinitis and its benefits in the symptoms of nasal blockade, rhinorrhoea, and sneezing. 2. To study the nature and incidence of immediate and late morbidity following cryosurgery
Material methods: *Detail study of 50 cases of chronic allergic rhinitis patients was done over a period of two years and they were treated with cryosurgery and were followed up at monthly intervals for a period of one year and the response was evaluated in terms of relief of symptoms.*
Results: *Obstructive symptoms were eliminated in 93% and rhinorrhoea was relieved in 81%, cases and sneezing in 70% cases. Complications were minor; mild postoperative pain, head ache and slight bleeding were encountered in immediate post operative period. Three patients developed synechia after one month of cryosurgery which removed and patient regained good nasal patency.*
Conclusion: *This cryotherapy technique provides significantly improved results in the treatment of chronic allergic rhinitis. Cryoablation procedures on the inferior nasal concha are not the primary therapy, but together with other methods they can immensely improve the life comfort of a rhinitis patient.*
Keywords: *cryosurgery, chronic allergic rhinitis, nasal obstruction, sneezing, nasal discharge.*

INTRODUCTION

Allergic rhinitis, also known as hay fever, is a type of inflammation in the nose which occurs when the immune system overreacts to allergens in the air. Signs and symptoms include a runny or stuffy nose, sneezing, red, itchy, and watery eyes, and swelling around the eyes.[1] Allergic rhinitis is the most common type of chronic rhinitis, affecting 10 to 20% of the Population2. Severe allergic rhinitis has been associated with significant impairments in quality of life, sleep and work performance.[3] the management of allergic rhinitis is an art and science.[2]

Kryos' is a Greek word meaning cold. The therapeutic value of Cryosurgery was first reported by James Arnott (1850), who found it possible to relieve the pain in patient suffering from malignant diseases by freezing the tumor using the cold saline solution. Cooper and Lee devised closed Cryogenic system based on liquid

nitrogen as coolant In order to get the tissue to be destroyed it must get a temperature of at least -200C.[20] Since then Cryosurgery has been used in variety of ENT ailments and head and neck diseases. Cryosurgery basically freezes and debulks the hypertrophied inferior turbinate as well as the destroys the autonomic innervations, by a cryoprobe at - 90. It is easily available simple set up, OPD procedure, no anesthesia, no hospit-alization required and gives almost permanent relief. Keeping in view minimum side effects and minimal morbidity present study was undertaken on 50 patients to closely observe efficacy as well as side effects both immediate and delayed. Available simple set up, OPD procedure, no anesthesia, no hospitalization required and gives almost permanent relief. Keeping in view minimum side effects and minimal morbidity present study was undertaken on 50 patients to closely observe efficacy as well as side effects both immediate and destroys the autonomic innervations, by a cryoprobe at - 900C. It is easily available simple set up, OPD procedure, no anesthesia, no hospitalization required and gives almost permanent relief. Keeping in view minimum side effects and minimal morbidity present study was undertaken on 50 patients to closely observe efficacy as well as side effects both immediate and delayed

MATERIAL AND METHOD

50 cases of Allergic Rhinitis patients were chosen irrespective of age, sex and socioeconomic status. The Present Study was conducted in the Depart-ment of, E.N.T. Govt. medical college Patiala over a period of 2years. The Criteria applied for selecting this case were. All these 50 patients were chronic case of Allergic Rhinitis. Informed consent was taken from all the patients.

All these patients had received all sorts of conventional treatment earlier and had failed to response to these treatments. All patients had 3 major Allergic symptoms.

- Nasal obstruction
- Nasal discharge
- Sneezing

Some patient had watering and itching of eye, Headache and Anosmia.

Exclusion Criteria

Paranasal sinuses infection, vasomotor rhinitis, bony hypertrophy of inferior turbinate. In every patient Routine haemogram, complete blood counts were carried out. According to detailed history, through clinical examination and considering duration of symptoms cases were diagnosed as Allergic Rhinitis and decision was taken to treat these cases with Cryosurgery. Cryosurgery procedure was performed as an outpatient procedure in ENT operation theatre. Gauze soaked in 4% xylocaine was placed in nasal cavities for topical anesthesia of inferior turbinate. All the 50patients were treated with Cryosurgery. EQUIPMENT and TECHNIQUE The Cryosurgical ERBOKRYOCA unit with Cryoprobe and Cryogenic gas as Nitrousoxide was used. The Cryounit is designed to achieve a Freezing Point of (-900C) temperature.16 The Basic principle considered for this technique is post ganglionic parasympathetic fibers of their posterior nasal branches of the pterygopalatine ganglion are severed by transnasal route.19 The nitrous oxide is allowed to flow into the cryo unit which is designed to achieve a freezing point of -900C. The inferior turbinate were visualized and the tip of the cryoprobe was applied at selected points. The freezing time at each point is about 30 seconds and the tissue thawing is about 20 seconds. It takes about l0 minutes to complete the whole procedure on the both the sides patient were kept for 30 minutes after the procedure in recovery room and then send home.

Follow up was done on 7th day for removal of necrotic material. Anterior rhinos copy was done after one month to see epithelization of operated area.

Then follow up was done after two months to see improvement in symptoms and observed for complications.

OBSERVATIONS

In the present study majority of the patients were of age group is between 21 to 30 years (46%) followed by 31 to 40 years (20%). (Table 1)

Table 1(Age distribution)

Age in years	No of cases	%age
0-10	-	-
11-20	5	10
21-30	23	46
31-40	14	28
41-50	6	12
51-60	2	4
Total	50	100

Males were more commonly affected (58%) as compared to females (42%) which showed male preponderance. Majority of the patients were from middle class (60%) followed by rich class (22%) and lower class (18%). in our study of 50 cases ,service class and house wives had maximum incidence of allergic rhinitis, i.e. 16 were service class, 14 were house wives, 10 were farmers, 8 were businessmen. (Table. 2)

Table 2. Occupational incidence

occupation	No, of cases	%age
service	16	36
businessman	08	16
Household	14	28
agriculture	10	24
others	02	04
Total	50	100

In our study, the preponderance of allergy was in rural population 64% followed by urban 36%.

Majority of the patient showed aggravation on exposure to dust (80%) and seasonal change (10%). Food and wheat allergy was found in 4%cases. 2% cases had no history of allergy. (Table 3)

Table no. 3 Residential distribution

Area	No. of cases	%age
Rural	32	64
Urban	18	36
Total	50	100

70% patients had attack of rhinitis at morning, 10% at night while in 20% cases there were no diurnal variations. (Table 4)

Table no. 4 Type of allergy

Type	No. of cases	%age
perennial	40	80
seasonal	10	20
Total	50	100

The distribution of patients symptom wise is shown in table 5 which shows that maximum number of patients comprised of all the three symptoms. Sneezing en84%; nasal obstruction in 82%; and rhinorrhoea in 86% case.

Table No. 5 : Symptoms

symptoms	No of cases	%age
sneezing	42	84
rhinorrhoea	43	86
Nasal obstruction	41	82
lacrimation	15	30
Nasal irritation	20	40
Ear infection	2	4
asthma	1	2

On examination 88% showed mild to moderate inferior turbinate hypertrophy, 64% had pale mucosa, 20% had deviation of nasal septum and 4% showed nasal polyps. (Table 6)

Table No. 6 : Signs of Allergic Rhinitis

Signs	No. of cases	%age
Mucosal Changes	32	64
Turbinate hypertrophy	44	88
Deviation of septum	10	20
Nasal polyp	2	4

In 40 out of 50 patients absolute eosinophil count was more than 400 cumm.

After cryosurgery a remarkable improvement was found in nasal obstruction (93%), sneezing 90%, rhinorrhoea. (81%) rhinorrhoea. Almost Complete relief was found in nasal obstruction. (Table 7)

Table 7 Relief of symptoms after treatment

symptom	Cases	relief	Levels of Relief		
			comp	partial	No relief
Nasal obstruction	41	38	36	2	3
sneezing	42	38	22	16	4
rhinorrhoea	43	35	20	15	8
lacrimation	15	10	04	06	5
Nasal irritation	20	8	02	06	12
asthma	1	-	-	-	1

Immediately after cryothreapy 35 cases had mild to moderate pain over the dorsum of nose for a few hours 10 patients had mild headache and 5

patients had slight bleeding stopped after some time by packing. (Table 8) 3 patients developed synechiae one month after cryosurgery, which were excised and patients regained good nasal patency. (Table 9). So in the present study we have evaluated the role of cryosurgery as an effective measure for its treatment.

Table 8 : Immediate side effects

Effects	No Of Cases	%Age
Headache	10	20
Pain in nose and throat	35	70
Bleeding from nose	5	10

Table 9 : Delayed complications

complications	No of cases	%age
Synechia	3	6

DISCUSSION

The mainstay of treatment of allergic rhinitis involves identification and avoidance of provo-king allergens, use of topical corticosteroids nasal sprays and oral anti histaminic. However mucosal hypertrophy in the nasal cavity makes it difficult for topical spray to reach the inflamed mucosa which is the hallmark of allergic rhinitis. So the obstructing tissue may be reduced by intra or extra mucosal procedures.[4] So in the present study we have evaluated the role of cryosurgery as an effective measure for its treatment.

Dr. William cahn[5] defined cryosurgery as branch of therapeutics that relies for its value on local tissue changes reduced by rapidly achieved very low temperature.

Ozenberg[6] reported good results employing Freon as an coolant in cryosurgery. Ligezinski et al[7] used cryosurgery and found it be more useful than other conventional methods in early stages.

The incidence of allergic rhinitis in our study was 46% in the age group of 21 to 30 years and 28% in 31 to 40 years. With slight male preponderance. This was consistent with the study of Tuli and parmar[8] and vasindhra et al.[9] 80% of our patients had perennial allergic rhinitis while Shigehito Mori11 studied 45 patients with perennial allergic rhinitis with mean age of 25.7 years.

In our study service class were effected most (36%) followed by housewife's (28%) then agriculturist (20%) IN the present study the most important predisposing factor for perennial rhinitis was house dust (80%). It was known that allergic rhinitis was more common in intelligent class of people as substantiated by James and leavilt[10] who found no incidence of allergy in 6000 mentally ill people. House dust mite were the major causative agents of the perineal allergic rhinitis in females.[11]

Our study showed a positive family history in 38% cases. Atopy is genetically inherited were confirmed by family studies and twin studies of Hanso et al.[12]

In our study there was diurnal variation and symptoms were maximum in the morning Rhinorrhoea, Sneezing and nasal obstruction were the most common symptoms for which patients sought advice in our study. Most of the patients had more than one symptoms.[13]

In our patients there was increased eosinophilic count in 80% cases. This was slightly higher than other studies.[14]

Our study showed that cryotherapy is more effective in treating nasal obstruction (93%) than other symptoms. Varshney[14] reported 63.4% cure rate our study showed slightly better result than previous ones[15] Holden[17] and Poswillo[18] reported that the application of freezing to the inferior turbinate's gives more clinical relief than sub mucosal diathermy.

Immediately after cryosurgery 35 cases had mild to moderate pain on dorsum of nose and adjoining area of face for few hours which was relieved with analgesics. Mild headache was present in 10 patients. 5 patients had slight bleeding from the nose which was stopped by light anterior nasal packing. Three patients developed synechia one month after cryosurgery as a late complication these synechia were removed and patient regained good nasal patency.

CONCLUSION

Maximum incidence was in the age group of 21-30 years (46%). Males were slightly more affected than females (58:42). Service class people (educated) and housewife's were main sufferers of

this disease followed agricultural. Most of the cases were of perennial allergic rhinitis (80%) and had hypertrophic mucosa over turbines. Blood used eosinophilia provided valuable guidelines for the diagnosis of the disease. The relief in nasal obstruction was more than relief in other symptoms after cryosurgery. Regeneration of healthy psudostartified ciliated columnar epithelial was a constant feature and eliminates earlier concerned regarding atrophic changes.

Due to the simplicity, safety, asepsis, little or no bleeding, no need for anesthesia, no hospitalization, least mobility cryosurgery has gained popularity as definitive mode of treatment in allergic rhinitis with nasal obstruction. It is opinioned that cryo procedure has provided a significant, effective and safe toll to the practicing otorhinolaryngologist in treating the cases of allergic rhinitis.

Ethical approval: this study is in accordance with the ethical standards of this institute.

Informed consent: was taken from all the patients.

Conflict of interest- none

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REFERENCE

1. Aller 125 Dykewicz MS, Hamilos DL (February 2010). "Rhinitis and sinusitis". The Journal of (2 Suppl 2): S103-15. doi: 10. 1016/j.jaci.2009.12.989. PMI Dgy and Clinical Immunology.
2. Bicknell P.G.()1979):Cryosurgery of allergic and vasomotor rhinitis technique and patient selection for improved results: Laryungo scope 94:539-544.
3. Voorhost R. Spieksma Boezeman MI A and Spieksman F.T.M. (1967): Identify with the houst-dust allergen Jornal of allergy 39, 325 4. Schacter J. Higgin M.W (1976):
4. Mabry RZ. Inferior turbinoplasty patient selection technique and long term consequences. Otolaryngol and Head Neck Surg. 1988;98:60-66.
5. Cahan WG and Montesa AF. Cryotonsill-ectomy in dogs. Arch Oto-Laryngol 1965; 81:372-87.
6. Ozenberg JM. Cryosurgery in chronic rhinitis. The Laryngoscope 1970;80:723-34.
7. Lezinski A, Jurkienwicz D and Hermanowski M. N20 cryotherapy in treating allergic rhinitis. Pneumonol Alergol Pol 1993;61☹7-8)405-8.
8. Tuli BS and Parar TL. A review of 731 cases of inferior turbinaectoies. Ind J. Otolaryngol and Head and Neck 1992;1(3):129.
9. Vasundhara P Varute, Pratap A Varute, Rutuja More, Prajktha Patil. A study of chronic allergic rhinitis in rural International Journal of Recent Trends in Science and Technology. September 2015; 16(2): 366-370.
10. James JA. Diseases of ear, nose and throat. Butterworth & Co. Ltd. London, 2nd Ed; 1965:353-73.
11. Shigehito M and Shingehaw F. Long term effect of submucus turbinnnnectomy in patients with perennial allergic rhinitis. The Laryngoscope 2002;112-:805-69.
12. Charles L Hill et al. Symposiu on cryo-surgery Pathophysiology effect of cryos-urgery. The Laryngoscopy 78;620-22,663.
13. Saurabh Varshnney (1997): Cryosurgery in Allergic Rhinitis. Indian Journal of Otolaryngology and HNS/Volumen49 No.1 Jan-March 1997.
14. Kakkar PK. Arora et al. Adrenergic funct-ion in nasal allergy Ind J Otol 1976;2:81.
15. Rakover Y and Rosen G. A Comparison of partial inferior turbinectomy and cryosurg-ery of hypertropic inferior turbinate. J Laryngol Otolo 1996;110:732-35.
16. Dhingra PL. Allergic rhinitis. Disease of Ear, Nose and Throat, 3rd edn; 2004:205.
17. Holden H.B and Mc Kelvie P (1972): Application of freezing to the inferior turbinates. Journal of Laryngology 86, 821

18. Poswillo 1971: Cryosurgery by H.B. Holden Recent advances of otolaryngo-logy vol no.4 (1973) 335-344.
19. Mary Y.K (1987): A study of use cryo in the management of Allergic rhinitis. A Paper
20. Frader J and Gill W. Cryosurgery in ENT Practice. Br J Surg 1967;54:770