Material and Methods
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The present study "A Histopathological study of nasal mucosa Pre and post antiallergic medication including oral and topical drugs in Allergic Rhinitis in E.N.T. department of M.L.B. Medical College and Hospital Jhansi."

A majority of patients belonged to Jhansi district and nearby areas. Patients not willing to attend hospital regularly for treatment and follow up were not included. Total Number of Cases studied were 68.

Diagnosis of allergic rhinitis was made mainly on clinical history and nasal examination of findings. A Special Case Sheet Showing all the details to be gathered, was made and finding recorded.

HISTORY
A detailed history was taken of all patients as Follows –

1. Complaints
   - Nasal Obstruction - Whole day, Morning or Evening
   - Nasal discharge - Watery, Mucoid or Mucopurulent
   - Sneezing - No. of attack, variation according to time, Precipitating factor
   - Sense of Smell -
   - Headache - Unilateral, Bilateral, Frontal, Occipital or Generalised
   - Itching - Nose, throat, Eye or Palat
   - Swelling - Face, Eye
2. **Attacks**

With particular attention towards the duration, frequency, seasonal variation and excitants for the attacks.

(i) **Other allergies**: History of Asthma or allergy was taken.

(ii) **Discharge**: The nature and quantity of nasal discharge.

(iii) **Past illness**: History of any illness in the past whether allergic or non-allergic and if any surgical intervention was required.

(vi) **Drug / Food allergy**: History regarding any allergy to milk, aspirin, sulphas, pollen cosmetics etc. was asked for.

(v) **Family History**: A Family history of allergic rhinitis was asked for.

**CLINICAL EXAMINATION**

A Thorough clinical examination was done to rule out any infective or obstructive cause for this symptomatology and for any nasal pathology like nasal deviation and polyposis etc.

1. **Nose**

(a) **External Appearance**

(b) **Anterior rhinoscopy**

- Vestibule
- Mucous membrane
- Turbbates-size and color
- Secretion - if any the nature and amount.
- Meptie were examined for the presence of any discharge.
- Septum and airway if adequate

(c) **Posterior rhinoscopy**

- Patency of Eustachian tubes

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Inspection of posterior ends of the inferior and middle turbinate.
- presence of any discharge

2. Throat
- Orodental hygiene, tongue, soft and hard palate.
- Pillars of tonsils, tonsils, post pharyngeal wall.
- Indirect Laryngoscopy

3. Ears
- Pinna
- External auditory canal
- Tympanic membrane
- Hearing

4. General Examination

A Routine general physical examination was done

INVESTIGATION

Blood Examination:
The haemoglobin percentage, total leucocyte count and the differential leucocyte count was done for all patients. DLC was done to look for eosinophilia.

X-ray Paranasal Sinuses:
An x-ray PNS occipitomental view was done in each case to rule out any associated sinus infection In the patients who were having maxillary sinusitis, an antral wash out was done they were not included in die study.
Inferior Turbinate Biopsy :

Once a clinical diagnosis of allergic rhinitis was made each patient was subjected to biopsy of the mucous membrane of inferior turbinate. The side from which the biopsy was to be taken was first 2% xylocain with adrenaline was applied with cotton and then injected 2% xylocain with adrenaline, then wait for 5 minute and then the help of microcup forcep and microscissors a small piece of tissue was taken from patient inferior turbinate. The tissue was stored in 10% formal saline and sent for histopathological examination. The biopsy was repeated after 3/4 week of Anti allergic, (older & Newer groups oral and topical spray) drugs in each patients again and biopsy specimen again subjected to histopathological examination. When making the second biopsy from another inferior turbinate.

Histological Technique

After fixation in formal saline for 24 hours the tissue was processed by autotechnicon and embedded in paraffin and blocks were prepared. Sections were cut in wesswox opte microtome at 4 micron and routine haematoxyline and eosin (H&E) staining was done.

Haematoxylin and Eosin Staining Process:

- Bring sections to water
- Stain in Ehrlich's hematum - Till Overstrained (10-15min).
- Rinse in water
- Differentiate in acid alcohol (1% conc. HCL in absculte-methylated sprit) till only nuclei are stained.
- Rinse in running water for 5 min
- Differentiate eosin in running water.
- Dehydrate in alcohol, clean and mount it.
Result

The cells take purple stain, the rest of all tissue takes pink stain.

A Special staining of Mast Cell (Hughesdons Metachromatic Method)
(Hughesdon, P.E. (1949)J. Roy, Micr, Soc., 69.1.)

Mast cells are found in tissues under a variety of conditions both
normal and pathological.

This Azur-uranyl nitrate metachromatic method of Hughesdon's is
excellent for mast cell granules.

Required
1. 1 per cent aqueous potassium permanganate.
2. 5 per cent aqueous oxalic acid.
3. Either one of these three Azur stains can be used:
   1 per cent aqueous Azur A.
   0.2 per cent aqueous Azur B.
   1 per cent aqueous Azur C.
4. 0.5 per cent aqueous uranyl nitrate.

MAST CELL GRANULES

To Stain:
1. Bring sections to distilled water.
2. Oxidise with the potassium permanganate solution one to three
   minutes.
3. Wash in tap water
4. Treat with oxalic acid solution until colourless.
5. Rinse in distilled water followed by tap water.
6. Stain with Azur A, B or C for two minutes.
7. Rinse off stain with uranyl nitrate solution and replace with fresh,
gently rocking the slide to ensure even differentiation. The time
varies between ten to sixty seconds. When the section is pale blue, rinse in tap water.

8. Blot.

9. Quick rinse in absolute alcohol or 74 O.P. spirit.


11. Mount in balsam or D.P.X.

Result:

Mast cell granulose .................................. crimson or red other tissue elements, including muscle striation ................. various shades of blue.

Treatment

After making diagnosis full details about nasal biopsy (Before and after treatment) and also the alternative modes of treatment available were explained to the patient. Only those patients willing for this treatment ad also willing for close follow up were selected for the study.

Three topical nasal drugs chosen for comparative clinical as well as histopathological study.

These drugs were -

(1) Older group of antiallergic - (a) Oral antihistaminic – Pheniramine,

    Dimethinedene, Chlorpheniramine

    (b) Topical - Xylometazoline, Naphazoline

    and Hydrocortisone

(2) Newer group of antihistaminic – (a) Levocetrizine, Fexofenadine,

    Ebastine

    (b) Beclomethasone, Fluticasone,

    Budesonide

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Xylometazoline, Naphazoline (Decongestant) and Hydrocortisone

Decongestant when applied topically to nasal mucosa in from of either nasal drops or aerosol, acts as a decongestant in allergic rhinitis.

It is a sympathomimetic amine of the imidazoline class. It is direct agonist al α₂ adrenoceptors and has no action on β adrenoceptors. It produces a rapid and prolonged vasoconstriction lasting for upto 8-12 hours.

Hydrocortisone is a short acting steroid. It acts or for short time it marketed with Naphazoline under the trade name of efcorlin. Hydrocortisone part is having some systemic side effects.

MODE OF USE
Dosage - adults including children over age of 12 years. 2-3 drops of either 0.05% or 0.1% solution in each nostril repeated at intervals of 8-12 hours maximum for 3 weeks. Xylometazoline in marketed under the trade names of otrivin (Ciba-Geigy), Decon (cadila). Xylmctazoline nasal drops contain 0.1% arid pediatric nasal drop contain 0.05%.

Newer Topical Drugs

Budesonide, Beclomethasone, Fluticasone

Topical corticosteroids have been widely used for years in the treatment of allergic rhinitis. Budesonide is a new non halogenated corricosteroid for topical use in cases of allergic rhinitis. Fluticasone is a synthetic trifluorinated cortisteroid and Beclomethasone also a steroid. These steroids with a high ratio of topical to systemic effect has recently been synthesized (Thalen & Brattsand, 1979), Earlier clinical studies have demonsirated a favorable effect on allergic rhinitis.
Budesonide is marketed under the trade name of Rhinocort, 
Baclomethasone is marketed under the trade name Econase and Fluticasone 
is marketed under the trade name Econase.

**Doses:**

Fluticasone - 200mcg/day  50mcg/spray

Beclolemasone - 400mcg/day  50 mcg/spray

Budesonide - 200mcg/day  50 mcg/spray

At each visit of the patients, under going therapy of with one of the 
above mentioned topical nasal drug, were asked whether they had noticed 
any adverse effects.
APPENDIX

(A) CASE RECORD

S. No.: _______________  Date: _______________
Name: _______________  Age / Sex _____________
Registration No.: _______________

COMPLAINTS:
1. Nasal Obstruction
2. Nasal Discharge
3. Sneezing
4. Other complaints, if any

HISTORY OF PRESENT ILLNESS:

PAST HISTORY:

IDIOSYNCRASIES:

FAMILY HISTORY:

PERSONAL HISTORY:

TREATMENT HISTORY:

GENERAL PHYSICAL EXAMINATION:

ENT EXAMINATION:

Nose:

1. External Appearance

2. Anterior Rhinoscopy
   Vestibule
- Septum
- Nostril
- Airway
- Tubinates (Size and Colour)
- Discharge (Character and Amount)
- Meatus (Middle and Inferior)

3. Posterior Rhinoscopy

Throat

➢ Orodental Hygiene
➢ Oral Cavity
➢ Oro Pharynx
➢ Laryngo Pharynx

Ears

SYSTEMIC EXAMINATION :

LABORATORY INVESTIGATIONS :

- Blood Hb%, TLC, DLC
- Urine RE
- Nasal Smear
- X-ray PNS
- Nasal Punch Biopsy

TREATMENT GIVEN :

FOLLOW UP :
Photograph - II
Showing Instruments used in Inferior turbinate biopsy procedure

Photograph - III
Showing Nasal drugs used in Allergic rhinitis