

Vasomotor and allergic rhinitis

Vasomotor rhinitis

Definition

This term denotes a combination of nasal obstruction, watery rhinorrhoea and sneezing of unknown etiology. It appears to mean different things to different people and is probably best considered as a 'dustbin' term for a group of ill understood conditions. Symptoms appear to be due to a predominance of parasympathetic activity

Aetiology

Predisposing factors

1. *Heredity*: plays a significant part in some females
2. *Infection* a preceding history of bacterial or viral infection leading to hyper reactivity is common
3. *Psychological* and emotional factors . the symptoms may be in the nature of a stress phenomenon . fear produces a vasoconstriction whereas humiliation, frustration and anxiety lead to engorgement of the mucous membrane .
4. *Endocrine* influences . VMR more common in puberty during menstruation and pregnancy with sexual excitement (honeymoon rhinitis) and in old age (senile rhinitis more common in male)
5. *Sensitive foci* , small areas on septum and inferior turbinate (francis)
6. *Drugs* hypotensive drugs (adrenergic blocking agents . methyl dopa and reserpine) cause edema of the nasal mucosa in some patient .
Aspirin intolerance may be present with chronic rhinitis , nasal polyposis as well as asthma and urticaria
Oral contraceptive drugs high on estrogen
Anticholinesterase such as neostigmine

7. Over use of local applications tends to produce rhinitis medicamentosa from rebound mucosal congestion . applications tend to be habit forming

Precipitating factors

.Usually act as a 'trigger' on a hyper-reactive mucosa

a).Atmospheric conditions. Changes in humidity and temperature may cause

.attacks. These may give the impression of seasonal allergy

Fumes, dust and alcohol. May provoke a non-allergic

b).hypersensitivity

c) Reflex.-The sneezing on waking or getting out of bed on to a cold floor

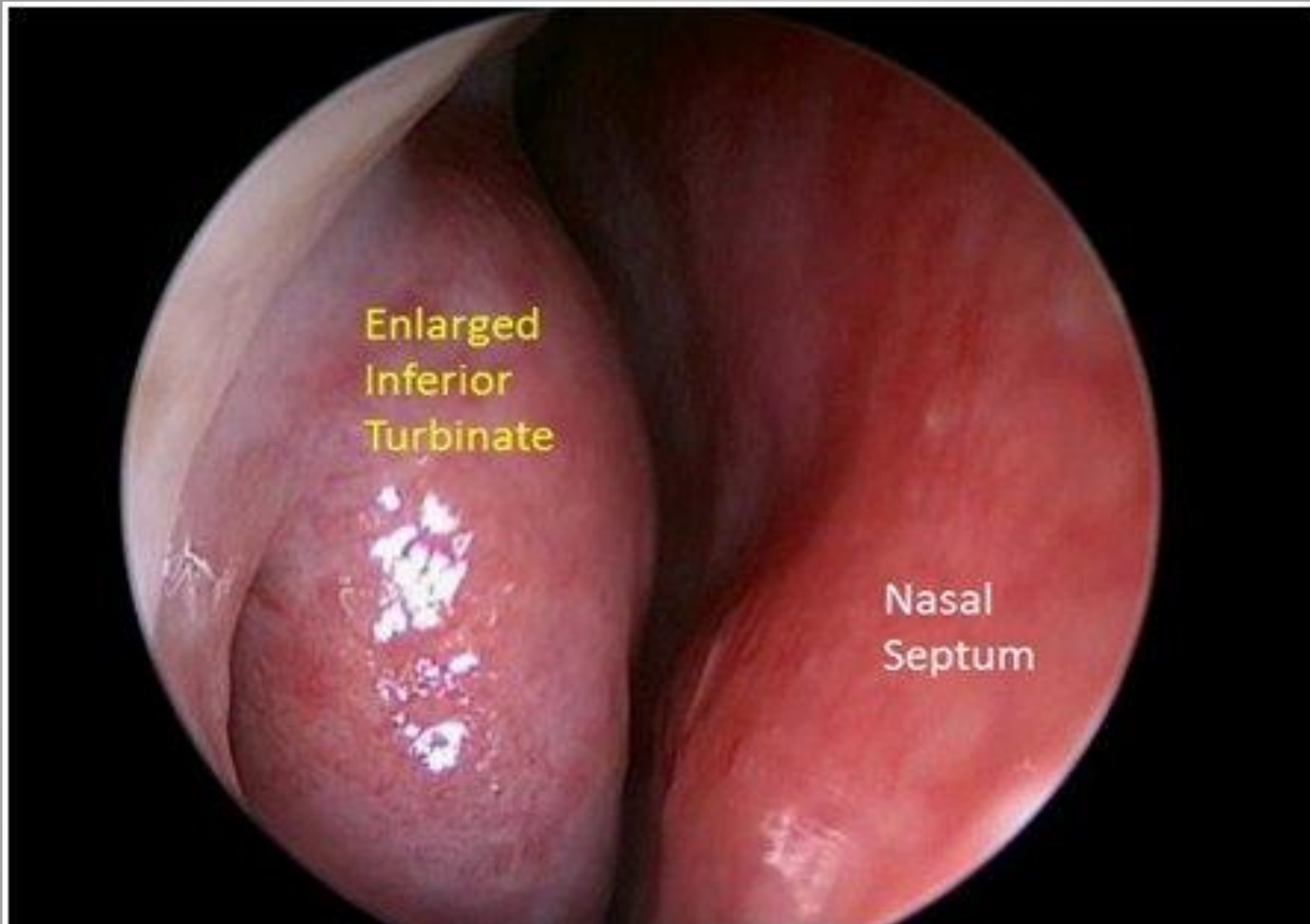
may be of this nature. Exercise may act as a factor

Pathology

The nasal mucosa may sometimes be normal in color and texture but is generally hyperaemic and hypertrophic

Polypi. Occur, contrary to previous *views, more commonly than in true allergy. They contain eosinophils especially in cases of aspirin intolerance

Hypertrophy of the inferior turbinate. The commonest change. The anterior ends are more commonly affected, but the Posterior ends may be very bulky and pale- hypersensitive areas may be present on the septum or turbinate



Enlarged
Inferior
Turbinate

Nasal
Septum

Age incidence

Any age

Clinical features

:Similar to those of allergic rhinitis. The chief complaints are

.Sneezing which is paroxysmal .

.Rhinorrhoea which is spasmodic,profuse and watery .

Nasal obstruction, which is often variable and may .

alternate from side to

.side, especially with positional changes

'Postnasal discharge (`drip) .

.Nasal tip dew-drop' in elderly persons: .

All of these complaints are summarized by the lay patient as

`catarrh

Differential diagnosis

.Allergy

Infection

Foreign bodies, adenoids in children

Treatment

A) avoidance. May be practicable with some patients, when precipitating

.factors are known, e.g. drugs

B)Antihistamines are useful in many cases, especially for -patients with

.Rhinorrhoea and sneezing. Given by mouth

C)Nasal medicaments. Topical steroids as drops, spray or aerosol may be

effective (betamethasone, mometasone spray , budesonide spray).

-Sodium cromogly

cate insufflation (Rynacrom) or drops (Lomusol) also deserves -trial.

ipratropium bromide is useful especially for watery rhinorrhoea

D) Cryosurgery or hot wire cauterization to the surface of inferior turbinates reduces the population of mucous glands. Scarring produced can improve the airway. The effect is short lived

E). Submucosal diathermy to swollen inferior turbinates reduces the bulk of the submucosa. The effect lasts for about 6 months. Trimming of the inferior turbinates is effective but if the airway is increased excessively especially when combined with intranasal antrostomies, atrophic rhinitis can result. Before considering turbinate surgery it is important to ascertain that the patient has true obstruction.

F).Removal of polypi if large and obstructive

H)Correction of septa' deflections of spurs should be considered. to relieve

.an obstructed airway

I) Vidian neurectomy rarely may be justified in severe cases where sneezing

and rhinorrhoea are the chief complaints. Symptoms frequently return within 2 years. Various techniques such as clipping the ends of the cut ,nerve

introducing silastic sheets into the pterygopalatine fossa have been tried to

.prevent reinnervation but without long-term success

J)Psychological adjustment is a very important line of treatment in many Cases. Sedatives and/or tranquillizers, may be needed

Nasal allergy



Allergy is an abnormal reaction of the tissues to certain substances. The causal substances are called allergen . They may be known or only -presumed. They are antigens, capable of making the body produce antibodies. In allergic subjects, in addition to these normal antibodies, a special form of antibody (IgE, reagin) is produced. These reaginic antibodies easily fix on tissue cells, including those of the nasal and bronchial mucosae or the skin. Similar reactions can be produced by non-specific and non-allergic factors) thereby causing confusion

Aetiology

Mechanism of allergy

There are three main phases

A) IgE is formed by lymphocytes. In normal individuals there is an IgE suppressor factor which keeps IgE synthesis in check. In allergic individuals

there is an IgE helper factor which appears to promote production at times

of exposure to an allergen

IgE is bound to mast and basophil cells. An interaction

B)-between the cell

bound IgE and the allergen initiates the secretion of pharmacologically active

substances such as histamine that lead to the clinical manifestations

Changes occur as in acute inflammation, capillaries become more permeable the ground substance viscosity is reduced by enzymes such as hyaluronidase and oedema occurs. Eosinophils infiltrate the tissues and are easily detected in the secretions. Serous alveolar glands are stimulated either directly or via an autonomic reflex nervous patterning to produce excess watery secretion

Predisposing factors

.These are very important. Many may coexist

A)*Hereditary*. A family history of similar or allied complaints is common.

.No

exact genetic basis has been established. The term `atopy' is used to define

.the inherited tendency

B)*Physical*. Changes in' the humidity and content of the inspired air

-some

.times render the nasal mucosa more susceptible

C)*Infection*. From viruses and bacteria, may alter the permeability of the tissue to allergens

Precipitating factors

:Allergens may be grouped as

.A)**Exogenous**. Coming from outside the body

Inhalants form the biggest group and are especially important

-in adults

very large number have been recorded and they include

,dusts, pollens

animal emanations, feathers, and fungal spores and the

house-dust mite

.Dermatophagoides)

-Ingestants (foods) are especially important in children. There

may be one obvious substance such as eggs, strawberries,

nuts or fish; but in nasal allergy it is more common to have a

less obvious cause such as milk or wheat.

-Contacts to skin or nasal mucosa are uncommon causes of nasal allergy but inquiry must be made to exclude a coexisting dermatitis. Face powders, and hair from electric razors, must be excluded. Nasal drops or sprays used for the relief of symptoms may produce an adverse reaction, as also may penicillin and sulpha drugs when used locally.

- Drugs: it can be difficult clinically to differentiate from true allergic rhinitis and vasomotor rhinitis due to drug effects on the autonomic nervous system. Penicillin allergy usually manifests with an allergic skin reaction or asthma; nasal symptoms may be part of a more generalized allergic response.

-Infection: bacterial allergy has been suspected but never proved. Fungi and parasites may produce the same effect.

B). **Endogenous**. Coming from within the body. These include tissue proteins (from injured tissues, transudates and exudates)

Pathology

The reaction of the upper respiratory mucosa bears some relationship to the 'weal' reactions of the skin.

1. Local mucosal changes

Oedema. From intercellular transudation of tissue fluid. Due to damage to capillary endothelium, and loosening of cellular cement.

Infiltration with eosinophils and plasma cells

Thin watery discharge. From increased activity of the seromucinous glands. The mucin content is reduced; the fluid is sterile and contains eosinophils and is more alkaline than normal.

Vascular dilatation. Occurs, and when stasis is predominant, it leads to a purplish discoloration. This affects particularly the inferior turbinates, which may become enormously enlarged, especially at their anterior and posterior ends.

Polypi. Pedunculated portions of oedematous mucosa. Eosinophils are present. Polypi may be single or multiple. Usually develop in the ethmoidal cells, less often from the middle turbinates or antral lining. Superadded infection. Common. The mucosa is reddish in colour and the secretions are more viscid (jelly-like) before becoming frankly purulent. After each attack resolution occurs, but fibrosis follows with each ensuing attack. There is eventually a permanent fibrous thickening.

2. Involvement of the sinuses. Tends to occur as the condition progresses. The commonest pathological changes are:

Generalized thickening of the lining mucosa.

Polypi in the sinuses. Single (usually on the floor) or multiple. They increase the liability to superadded infection. More common in vasomotor rhinitis

o Fluid effusion into the sinuses. The fluid is sterile and clear but may become thick and gum-like in some chronic cases.

Clinical types

1. Seasonal ('hay-fever': pollinosis).
2. Non-seasonal (perennial)

. Age incidence

Nasal allergy often becomes manifest in children of school age. A common sequence is eczema in infancy, then rhinitis followed by asthma. Nasal allergy is less common after 50 years of age/

Differential diagnosis

1. Vasomotor rhinitis.

2. Irritant rhinitis. Industrial fumes. tobacco. dust and toxic gases are the commonest

3. Eosinophilic non-allergic rhinitis. These patients have the typical picture of perennial allergic rhinitis. However, skin prick tests are negative, negative serum radioallergen sorbent tests (RAST), and negative methacholine provocation challenges are found on investigation. Nasal biopsies reveal eosinophilia. activated cilia and damaged epithelium. There is an oedematous submucosa infiltrated with plasma cells, eosinophils, lymphocytes and neutrophils some mast cells. The condition may be exacerbated by the ingestion of nonsteroidal anti-inflammatory drugs. It does not respond to Rynacrom.

Clinical features

vary in severity from day to day, or even from hour to hour.

1. Nasal obstruction. Due to venous stasis of the inferior turbinates and/or mucosal oedema. This is usually bilateral. Obstruction from polypi tends to be constant, but they occur less commonly in allergic than in vasomotor rhinitis.

2. Rhinorrhoea. A clear, watery discharge may be extraordinarily profuse. A postnasal 'drip' may occur, though less often than in infective rhinitis.

3. Sneezing. Commonly occurs in paroxysms. Some patients are never afflicted, others are exhausted by it.

4. Nasal irritation. A 'tickling sensation with or without sneezing'

5 Anosmia Sometimes complain 'intermittently or continuously, even in the absences of obstruction



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. **Diagnosis**

Careful history. The most important aid to a correct diagnosis. Evaluation of family and personal records is essential. A record of infantile eczema is common. Symptoms of asthma are sometimes a feature. Occupation such as hairdressing and fur trading are noted.

Clinical examination. May give immediate diagnostic aid but because of the paroxysmal nature of the complaint can be very indeterminate. There is no 'typical allergic nose'. **Eosinophils** . May be found in great numbers in the nasal secretions or on microscopical examination of the nasal mucosa or polypi. The eosinophil count of the blood is raised, especially in the morning, and always in the presence of an extrinsic allergen. The count may be normal in hayfever sufferers out of the season.

Skin tests. These are confirmatory. They may show single or multiple sensitivities. Positive results are obtained in less than 50% of cases clinically suggestive of a non-seasonal allergy. Nearly all patients with seasonal symptoms will give confirmatory positive skin responses. In highly sensitive patients great care must be taken with test solutions to avoid widespread reaction, even anaphylaxis.

Intranasal test. A drop of test solution may promote rhinorrhoea and sometimes lacrimation - so-called 'nasal provocation' test.

Elimination tests. Can occasionally be helpful, especially in suspected food allergies.

Treatment

1. Avoidance of precipitating factors. The most important principle. It may be easy or virtually impossible. Dust elimination and similar prophylaxis should be endeavoured. The use of vasoconstrictor nose-drops and sprays must be condemned
2. Desensitization. This is indicated, except in the very young, if the allergen cannot be avoided and medical treatment has failed. It is really only of value in those patients who are sensitive to only one or two allergens. Significant risk of anaphylaxis exists. Desensitization injections must be given only where resuscitation equipment and staff are available for 2 hours after injection.
 - . *0 Specific extracts.* Contain minute doses of known causal factor or factors. They are applicable to inhalants chiefly. In the seasonal type, pre-seasonal injections are given.
3. Antihistamine drugs. These have afforded the biggest advance in therapy. They are best given by mouth. A very large variety is available, and difficulties arise in choosing the best for each individual as effects differ considerably. Some have marked sedative side-effects

. 4. Endocrine therapy

O Topical steroids. Spray, drops and aerosols are safe and effective with few side-effects when used only in the nose. Patients who are on high doses of inhaled steroids for asthma as well as topical nasal steroids can develop adrenal suppression.

o Depot steroids. Triamcinolone acetomde 40 mg by intramuscular injection, in seasonal rhinitis is helpful where symptoms interfere with special events, e.g. school examinations. Systemic steroids by mouth are dangerous both to continue and withdraw. A 2-week course of prednisolone 6Q mg/day reducing by. 5 mg /day orally justified after unavoidable airway surgery in a very allergic nose

.o Oestrogens can be given by mouth if the history suggests an association with the menopause.

5. Sodium cromoglycate. Often effective in controlling symptoms, used either as powder by insufflation, or as an aqueous spray.

6. Psychotherapy. May be indicated in some cases.

7. Surgical methods. Operations on the nose and throat should be avoided whenever possible in cases of nasal allergy. Surgery may or removal however, for the relief of gross obstruction or for the drainage infected material.

0 Removal of polypi. If obstructive.

- o SMR. May be indicated when a marked septal deflection is present, to improve the airway.

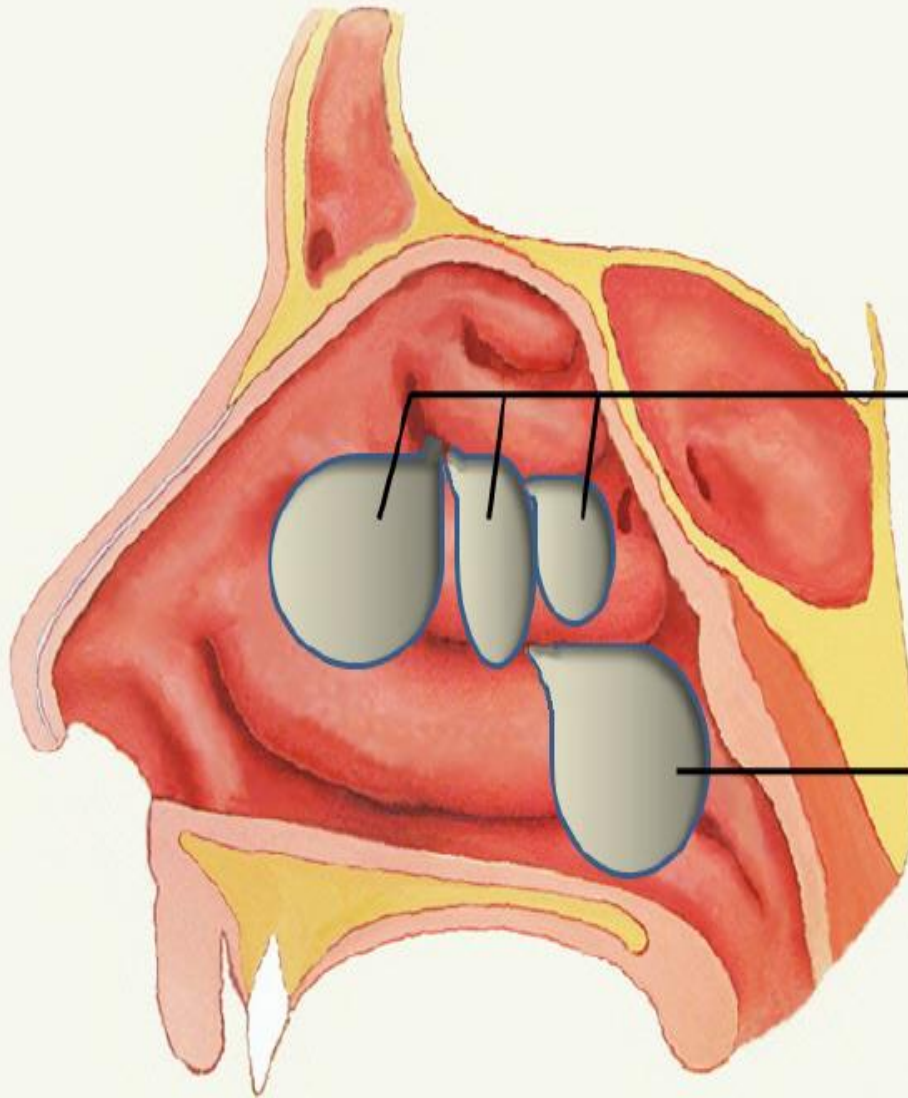
- 0 Reduction of inferior turbinates. Cauterization is largely superseded by submucosal diathermy. The cryosurgical probe may also be used “successfully. These procedures only give relief for 6 months to a year partial turbinectomy appears to give longer relief but is associated with troublesome postoperative epistaxis in about one in 80 cases.

o Drainage of infected sinuses. Operations on the Sinuses are performed only when gross infection is present.

Removal of tonsils and adenoids. Must always be a matter for careful consideration in children with a past or present history of allergy. As a rule, operation is best avoided unless infection is Obvious.

Nasal polypi

Lateral Nasal View of
Sinus Polyps



Ethmoid sinus polyps

Maxillary sinus polyp

Definition

A pedunculated portion of oedematous mucosa of the nose or paranasal sinuses

. Aeriology and pathology

Types

‘Two main types:

1. **Simple.** A simple ‘mucous’ polypus shows oedematous hypertrophy of the submucosa. There is a very loose fibrillar stroma, with intercellular serous (not mucinous) fluid. The surface is covered with ciliated columnar epithelium in the early stage; metaplasia to a transitional and then to a squamous type occurs in some cases many white cells are scattered throughout the stroma

Allergic : due to uncomplicated sensitivity to one or more allergens. The polyp usually multiple. Eosinophils and plasma cells are found in large number

Vasomotor; similar to allergic, but no allergen identifiable

inflammatory: the role of infection is unclear. Infection may be a secondary event to the stasis associated with polyp formation in polypi of non-specific origin. Allergy to bacteria or products of infection has not been proven. They are not common but may be regarded as: a) ‘Acute’, i.e. of recent origin. This is an uncommon type, usually associated with influenza. The polypus is usually single, very soft, and slightly haemorrhagic.

(b) 'Chronic non-specific', i.e. of long standing. These polypi are often multiple.

(c) 'Chronic specific'. Rhinosporidiosis causes a friable bleeding polypus resembling a strawberry.

Mixed infective-allergic: Probably represents secondary infection in the allergic or vasomotor type.

Aspirin intolerance: the mechanism of development is not known but is not allergic. When associated with asthma the recurrence rate is particularly high.

2. Neoplastic

Benign: The 'bleeding polypus of the septum' is a misnomer for 'fibroangioma' or granuloma. Neurofibromas, transitional-cell tumours, and fibromas may present as polypoid tumours, as also may gliomas in infants and meningiomas in adults.

Malignant: these are carcinomatous, melanotic, lymphomatous or sarcomatous, more commonly the first. They may simulate 'mucous' polypi, but they are usually more solid, friable extremely haemorrhagic.

Sites of origin

1. *Ethmoidal.* The ethmoidal cells are the commonest sites. The middle turbinate is next in frequency, polypi from these two sites tends to grow forwards the anterior nares

2. *Antral.* the antrum is less often the site of origin. there may be multiple polypi or a single polypus may emerge from the sphenoidal ostium extend backward to the posterior choana (antrochoanal polyp

Age incidence

Simple ethmoidal polyp usually occur in adult but children with cystic fibrosis can have them .antrochoanal polypi occur more commonly in children and young adult

Clinical features

Men 3 times more than females

Onset slow and insidious but may be sudden and rapid after acute infection

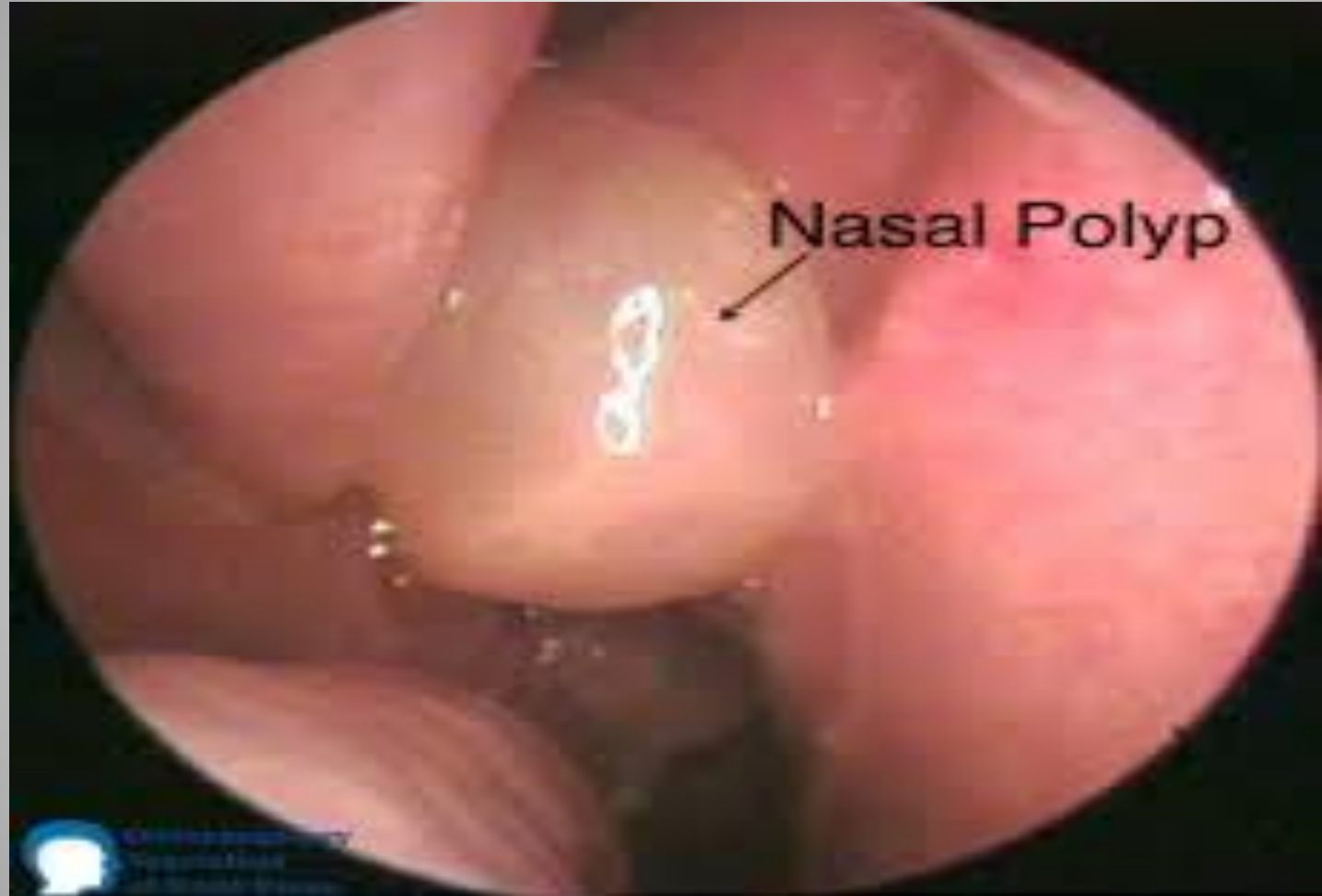
Nasal obstruction is the chief symptoms , others includes anosmia , epiphora , postnasal drip (catarrh) feeling of irritation and drip , headache , snoring and speech defect

Antrochoanal polyp causes marked obstruction even without any visible ethmoidal polypi

Sneezing and clear rhinorrhoea are common when polypi are associated with nasal hypersensitivities

Purulent rhinorrhoea is common when the infection is present and often associated with headache

Expansion of the nasal bone with broadening of the nasal bridge occurs in long standing cases (frog –face)



Nasal Polyp

Diagnosis

A simple mucous polypus can be traced up to its stalk in the middle meatal region . gentle probing differentiates it from turbinate . a large polypus may present at the anterior nares
Biopsy is essential when the polypus is unilateral and hemorrhagic

Radiography of the sinuses often shows widespread changes due to infection or allergy

Treatment

Conservative

In early cases and mild cases it is enough without surgery

1. antihistamine locally or by mouth
2. local decongestant used as drops or spray ' rebound ' congestion and addiction may be promoted
3. topical steroid therapy. Beclomethasone aerosol spray 200 g t.d.s. ' . will often shrink existing polypi and prevent recurrence of those removed surgically
- . 4. Combination therapy. This is aimed at preventing the degranulation of mast cells, the reduction of oedema and control of infection. Oral prednisolone on a reducing dose regimen is given for 15 days starting with 30 mg/day. Betnesol nasal drops are administered four times daily for a month. An antibiotic is given for a week. Finally those patients with a known allergy are given an antihistamine as well. Nasal polyposis is brought under control rapidly with this regimen. Then the patient is maintained on a steroid nasal spray with an antihistamine if appropriate.

Surgical

Required when obstructive symptoms are established.

1. *Minor procedures.* Removal with the cold-wire snare is often necessary as the first stage of treatment. This can be successfully done as an out-patient procedure, using local analgesia. It is more satisfactory with single than with multiple ethmoidal polypi. An antrochoanal polypus is rarely removed effectively by this method owing to recurrence from its antral origin.

{2. *Major procedures* are indicated for recurrent multiple polypi; for gross infection; for antrochoanal polypi

o **Ethmoidectomy** may be performed by three routes:

(a) Intranasal, when great care must be taken to avoid damage to the orbit, and its contents and to the floor of the anterior cranial fossa. Complete clearance of the polypus-bearing area is rarely attained.

(b) Transantral, especially when the antrum is infected. It is impossible to reach the anterior ethmoidal cells by this route, especially the agger cells. It must therefore be combined with an intranasal approach.

(c) External, is often safer and more thorough than the other two as it allows better visual access.

o **Sublabial antrostomy** is used for recurrent antrochoanal polypi.

o **Functional endoscopic** surgery is done per nares. It has the advantages of a reduced stay in hospital. The surgery may be difficult because of bleeding. It is not without considerable risk in inexperienced hands.

3. **Complications** and sequelae of operations for removal of polypi include:

- o Adhesions
- o Anosmia: Though often the sense of smell returns after minor or even major procedures
- . 0 Damage to optic nerve and other orbital contents.
- 0 Meningitis, following penetration of the floor of the anterior cranial fossa.
- o 'Onset of asthma may follow surgery, °often in the natural course of the disease. Long-term management Removal of polypi must be followed by thorough investigation and treatment of the causal factors. Persistence of the hypersensitive state may lead to recurrence of polypi and development of asthma .