Primary Atrophic Rhinitis
(With A New Hypothesis for its Aetiopathogenesis)

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One hundred cases of primary atrophic rhinitis were studied. Radiological evidence of osteolysis in the turbinals was observed before appreciable clinical atrophy has taken place. This is followed by osteolytic collapse of the turbinals, infection, crusting and stench. The collapse is presumably caused by the impact of constant impingement by the inspiratory stream on the already decalcified turbinals. It is proposed that at first the bone changes take place which are brought about by Reflex Sympathetic Dystrophy, affecting the lateral nasal nerves and the vascular erectile tissues on the turbinals. The dystrophy is thought to be caused by chronic infection and repeated trauma to the nose during infancy and childhood. Subsequently, collapse of the turbinals ensues. The progress of the atrophic change can be checked and the affected structures restored to normalcy by diverting the respiratory stream to traverse along the floor and medial compartments of the nasal fossae, away from the lateral walls, carrying the vascular tissues, as has been achieved by modifying Young’s operation. Complete closure of the nostrils is not necessary.

It is proposed that primary atrophic rhinitis belongs to the entity, "Reflex Sympathetic Dystrophy Syndrome".

Basing on this hypothesis, a new one-stage operation (Vestibuloplasty) has been devised which offers comparable benefit as after Young’s or modified Young’s operation (Ghosh, 1986).

Introduction

Aetiopathogenesis and rationalisation of treatment of primary atrophic rhinitis have baffled many scientists over the last half a century. Taylor and Young (1961) put forward a commendable concept as to the pathogenesis. The surgical management, described by Young (1971), is the hallmark of scientific approach to this formidable problem. They could not, however, explain fully as to why the nasal fossae should heal behind the closed nostrils and not following operations bringing about mere narrowing of the fossae. An attempt is made in this report to put forward a new hypothesis in order to explain the aetiopathogenesis of atrophic rhinitis which is proposed to be Reflex Sympathetic Dystrophy Syndrome (RSDS). Basing on this concept, the surgical operation, described by Young, has been modified, offering identical results as after Young’s operation, without producing the discomforts associated with complete nasal obstruction.

Review of Literature

Primary atrophic rhinitis is considered to be an idiopathic condition which is socially very disabling. The alleged role of endocrine dysfunction has fallen into disrepute from lack of evidence (Bernat, 1965). Many organisms have been isolated viz. Bacillus Mucosus, Perez Coccobacillus foefidus ozaenae, diptheroid bacillus, Klebsiella ozaenae, pseudomonas aeruginosa etc. all of which have been incriminated for causing atrophic rhinitis. But these have not been proved to be causative organisms and ozaena could not be produced in animals by experimental infection using a wide range of organisms including K. Ozaenae (Bernat, 1965).

Bernat (1965) considers that atrophic rhinitis is an iron-deficiency disease. Gadre et al (1971) observed mild anaemia in their cases. It is probably due to an inflammatory process which produces endarteritis and periarteritis of terminal arterioles (Ruskin, 1942; Taylor and Young, 1961 and Holopainen, 1967). Taylor and Young (1961) found that the endothelial cells, lining the dilated capillaries, showed a positive reaction for alkaline phosphates, indicating the presence of active absorption of bone. Zaufal’s mechanical theory (Bernat, 1965) attributes the disease to be secondary to skeletal changes viz. congenitally spacious nasal cavity.

Zinc deficiency may manifest as reduced smell and taste sensations (Condas et al, 1977; Boyette, 1982). It is indispensable to cellular function and division (Boyette, 1982) and is essential for the activity of serum alkaline phosphates. Because of this, low levels of alkaline phosphates can be expected in association with hypozincemia (Prasad et al, 1978 & 1979; Roth & Kirschgesner, 1974) and therefore, alkaline phosphatase activity may be used as an index of clinical zinc deficiency and as a monitor of therapy (Kasarkis & Schuna, 1980).

Jakabfi (1954) considers autonomic dysfunction to be of primary importance for producing atrophic changes, creating suitable conditions for the colonization of the mucosa by specific capsulated bacteria which then become pathogenic.

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Material & Methods

One hundred cases of atrophic rhinitis were studied over a four-year period from 1981-85. Four of them had unilateral atrophic rhinitis. The average age of presentation was seventeen years, ranging from 3 to 30 years. The sex distribution was 55% in males and 45% in females. Only one family (mother, one son of seven years and one daughter of nine years) showed atrophic rhinitis. No other members in their preceding two generations were known to have been suffering from atrophic rhinitis.

None of the patients showed any evidence of malnutrition or anaemia. Haemoglobin range was 10 to 16.9 Gm%.

Presenting clinical features were:
Group A—Anosmia and fetor, blocking of the nose, crusting & gross atrophy, in 75% of the cases ; Group B—Hyposmia or cacosmia, minimal atrophic change, minimal greenish discharge with/without crusting & faint fetor, perceived from very close quarter, in 15% of the cases & Group C—Mild hyposmia (reported on enquiry only) and cacosmia, absence of fetor and atrophy clinically, minimal or no greenish discharge and craving, in 10% of the cases.

The groups including the last one showed osteoporosis of the turbinals on routine skiagraphy (Fig. 1 & 1A). Some, belonging to the last group, on follow-up studies, showed atrophic changes within about six months though earlier they were diagnosed as chronic rhinitis only. This triggered off the present investigation. Later, with the above experience, the suspected cases were subjected to radiological investigations & this feature of osteoporosis was confirmed.

In 95% of our cases, the patients had dull nagging ache over the cheeks, nose and frontal regions. 98% of the cases reported, on enquiry, that they had been suffering from chronic nasal discharge, thick in character, since the time they could remember.

There was no clinical evidence of zinc deficiency viz. acrodermatitis enteropathica, growth retardation, hypogondism, infertility, rough skin, anorexia and lethargy, reduced taste, delayed secondary sex characteristics, poor wound healing etc. V.D.R.L. test of blood was negative in all the cases. Nasal swabs showed pseudomonas aeruginosa, Gram negative bacilli, Klebsiella ozaenae, Klebsiella pneumoniae and proteus mirabilis. No diphtheroid organisms were isolated. Serum alkaline phosphatase levels, done on 75 cases, were as follows: (a) 55 patients (about 73%) showed 12-44 I.U./litre; (b) 15 (about 20%) showed 45 to 60 I.U./litre and (c) 5 (about 7%, age ranging from 3-12 years), showed 75 to 88 I.U./litre. (The normal values in our hospital are 10-44 I.U./litre and in children, about double these values).

All the cases showed roentgenographic evidences of antral pathology (from moderate haziness to complete opacity, the latter in 65%); only 5% of these showed similar lesion in the ethmoidal and none in sphenoidal sinus. Only two showed haziness and/or fluid in the frontal sinus. Initially 50 of the cases were subjected to repeated antra washings and/or followed by Caldwell-Luc Operation. Profuse loose foetid pus was produced at each washing. Antral mucosae were found to be hypertrophic (clinically and histologically) in majority of the cases and some showed polypoid degeneration. None showed atrophic change. There was no improvement after the above treatment.

Zinc therapy (zinc sulphate 220 mg. TDS orally), local antibiotic drops viz. sofradex eye drops TDS and 25% glucose in glycerine drops, 4-6 times a day and nasal douching, all for one to three months, did not offer any significant improvement.

It was noted that in all the cases, at antrum puncture, the bones of the inferior meatuses offered about the same resistance to the puncturing trocar as in uncomplicated rhinosinusitis, indicating absence of significant osteoporosis in that region.

The above surgical and conservative treatments did not relieve the facial and head pain and twenty of them were subjected to stellate ganglion blocks (3 on each side, biweekly) and in all, the pain subsided. The rest of the cases, who improved after Young’s operation, had also complete relief of pain.