

Radiological changes and complications associated with nasal polyposis

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Summary

Background: Nasal polyps are pedunculated portion of oedematous mucosa of the nose or paranasal sinuses. Simple mucous or benign nasal polyps are an early recognizable clinical entity.

Methodology: A 5-year (1998 – 2002) study of 63 nasal polyposis patients seen at the department of Otorhinolaryngology of University College Hospital Ibadan, Nigeria with radiological changes and complications was done.

Results: Out of these 63 patients, 55 (87%) had associated radiological changes of which 34 (62%) were males and 21(38%) females with M:F of 1.6:1 and with an average age of 34 years. The duration of symptoms ranged from 2 months – 14 years.

The radiological changes were mainly seen in the maxillary sinus (40:33%), nasal cavity (37:30%) and ethmoidal air cells (21:17%), Sinus opacifications (90-100%) constituted the most common features seen followed by nasal cavity loss of radio-translucency (97%). 50(79%) had complications with sinusitis (98%) being the most common complication seen.

Conclusion: The nasal polyposis has been found in this study to cause the radiological changes mainly in the maxillary sinus. The plain radiographs of the paranasal sinuses demonstrated by at least the occipito-frontal, occipito-mental and lateral views would show the extent of the disease in the nose and paranasal sinuses to certain good extent.

Keywords: Nasal polyps, Radiological changes, Complications.

Résumé

Introduction: Les polypes nasals sont les parties pedunculées du oedème muqueux du nez ou sinus paranasal. Muqueux simple ou polypes nasals bénins sont des entités cliniques qu'on pourrait reconnaître.

Méthodologies: Une étude d'une durée de 5 ans (1998 - 2002) chez 63 malades atteints de la polypose nasale vue au département d'otorhinolaryngologie du collège hospitalier universitaire d'Ibadan, Nigeria avec des changements et des complications radiologiques a été effectuée.

Résultats: Parmi ces 63 malades, 55 soit 87% avait eu des changements radiologiques parmi lesquels 34 soit 62% étaient masculin et 21 soit 38% étaient féminin avec M:F

de 1:6:1 et avec l'âge moyen de 34 ans. La durée des symptômes varie entre 2 mois et 14 ans. Les changements radiologiques ont été principalement notés dans le maxillaire sinus (40:33%), cavité nasale (37:30%), cellule d'aire ethmoïde (21:17%)/Opacifications sinus (90 - 100%) représentaient les traits les plus accusés vus suivi par la perte de la cavité nasale de radio-translucidité (97%). 50 (97%) étaient atteints des complications avec la sinusite (98%) étant la complication la plus accusée vue.

Conclusion: A travers cette étude on a noté que la polypose nasale est attribuable pour des changements radiologiques principalement dans le sinus maxillaire et également elle provoque la complication sinusite qui se produit principalement dans le sinus maxillaire.

Les radiographies simples des sinus paranasaux démontrées par, au moins, des vues occipito-frontales, occipito-mentales, et latéraux vont montrer la gravité de la maladie dans le nez et sinus paranasaux en grande partie.

Introduction

Nasal polyps are benign mucosal protrusions into the nasal cavity of multifactorial origin. They are characterized by chronic mucosal inflammation with inflammatory cells like eosinophils usually, large quantities of extra-cellular fluids and mast cell degranulations.

Nasal polyps are common, affecting one to four percent of the population, however, the true incidence is difficult to assess^{1,2}.

The characteristic radiological changes of simple nasal polyposis are familiar to ENT Surgeons and Radiologists. However, in a proportion of patients the changes are much greater and include widening of the ethmoid labyrinth and nasal cavity, bone thinning and expansion, and mucocoele formation³.

These changes have not been well documented even though they occur quite frequently. It is the purpose of this study to establish and present the incidence of these radiological changes and complications associated with nasal polyposis.

Materials and methods

All patients referred, seen and managed in the Department of Otorhinolaryngology of the University College Hospital, Ibadan, Nigeria over a 5-year period from 1998 – 2002 with clinical features of nasal polyposis were studied including their plain radiographs of the paranasal sinuses that consisted of occipito-mental, occipito-

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frontal, lateral and post-nasal space projections.

Those that had radiological changes and complications from nasal polyposis were further analysed to meet the objectives of this study. The clinical diagnosis of nasal polyps was corroborated by histological diagnosis in each patient.

Results

There were 63 patients with nasal polyposis seen and treated over the five-year period, comprising 38 males and 25 females with an average age of 34 years (range 5.5 years-82 years). The durations of symptoms ranged from 2 months - 14 years.

Out of these 63 patients, 55(87%) had associated

Table 1 Sites of radiological changes

Sites of radiological changes	Incidence
Maxillary sinus	40 (33%)
Nasal cavity	37 (30%)
Ethmoidal sinus	21 (17%)
Pan-sinus	13 (11%)
Frontal sinus	11(9%)

Table 2 Types of radiological changes

Radiological changes	Incidence
Maxillary sinus(40; 33%)	
Opacities	36 (90%)
Fluid levels	3 (7.5%)
Mucosal thickening	1 (2.5%)
Nasal cavity 37 (30%)	
Loss of radio-translucency	36 (97%)
Septal deviation	1 (3%)
Ethmoidal sinus 21 (17%)	
Opacities	21 (100%)
Pan-sinus 13 (11%)	
Opacities	13 (100%)
Frontal sinus 11(9%)	
Opacities	11 (100%)

radiological changes of which 34(62%) were males and 21 (38%) females with a M:F 1.6:1.

The radiological changes were mainly seen in the maxillary sinus (40;33%), nasal cavity (37;30%) and ethmoidal air cells (21;17%) Table 1.

The various radiological changes seen at those locations are shown in Table 2 with sinus opacifications (90%- 100%) being the most common feature seen followed by nasal cavity loss of radio-translucency (97%) Figures 1 and 2.

Out of these 63 patients with nasal polyposis, 50 (79%) had complications with sinusitis (98%) being the

Table 3 Nasal polyps complications

Complications	Incidence
Maxillary sinusitis (Bilateral 54%, Left 25%, Right 21%)	24 (47%)
Pansinusitis (Bilateral 44%, Left 31%, Right 25%)	16 (31%)
Multisinusitis	10 (20%)
Frontal mucocoele/pyocoele	1(2%)



Fig. 1 Radiograph of paranasal sinus (Occipito-mental view) showing maxillary sinus opacifications bilaterally)

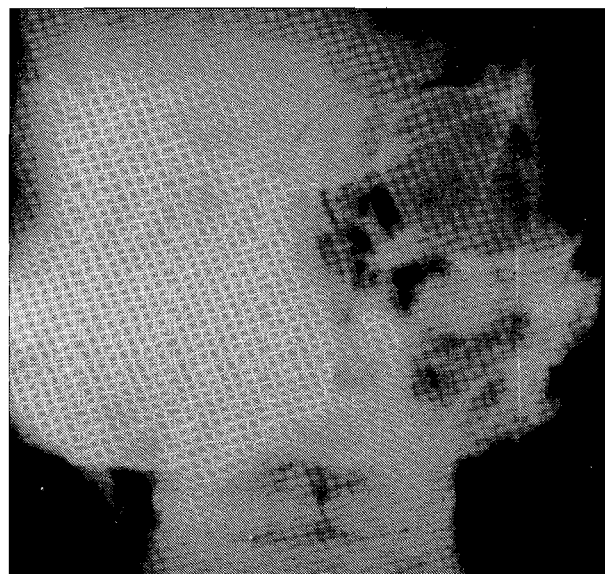


Fig. 2 Radiograph of paranasal sinus (Occipito-frontal view) showing right nasal cavity loss of radio-translucency, opacifications of right ethmoidal sinus and both frontal sinuses.

most common complication seen (Table 3).

Discussion

The characteristic radiological changes associated with simple nasal polyps include loss of nasal radio-translucency , bony septal deviation, opacifications of the si-

nuses, sinus mucosal thickening of a variable degree and fluid levels².

The fluid levels and sinus opacifications encountered are usually due to retained secretion alone or purulent material, since blockage of the ostium by polyps will prevent the migration of mucus from the sinus.

Long-standing nasal polyps can enlarge to such a degree that they produce expansion of the walls of the nasal cavity and ethmoid labyrinth.

Expansion of the ethmoid is usually encountered in those patients with polyps that developed before the bones fused². Paranasal bone destruction associated with benign nasal polyps was described in 1885 by Edward Woakes though it may have been recognised as early as 1628⁴. Bony erosion, although highly suggestive of malignancy, may be found in patients who have polyps and is usually due to previous surgery².

In this present study, 87% of the cases had radiological changes of which 34(62%) were males and 21 (38%) females with a M:F 1.6:1 and with an average age of 34 years.

The radiological changes were mainly seen in the maxillary sinus (33%) followed closely by nasal cavity changes (30%), ethmoidal sinus (17%) and frontal sinus (9%) respectively. All the sinuses (pan-sinus) had radiological changes in 11% of the cases.

The maxillary sinus in the presence of nasal polyposis will have changes in most cases with mucosal thickening of a variable degree until the antrum becomes opaque². Sinus opacifications is the most common radiological changes seen in this study from the effect of the nasal polyps (fig. 1) and this feature tends to be seen in all the sinuses-maxillary sinus 90%, ethmoidal sinus 100%, frontal sinus 100%, and pan-sinus 100%. Fluid levels 7.5% and mucosal thickening 2.5% were found but not so common (Table 2).

The next common radiological changes seen is the loss of radio-translucency of the nasal cavity (Fig. 2) seen in 97% of the cases while septal deviation constituted only 3% (Table 3).

Nasal polyps are seldom recognised individually on plain x-rays and usually the whole nasal cavity shows a homogeneous loss of translucence and the normal outline of the nasal cavity may be obliterated³.

In a proportion of patients the radiological changes would include ethmoid labyrinth and nasal cavity widening as expansion occurs more often in patients who develop symptoms at a very young age before their bones fused^{2,3}. These were not seen in this study and this may be due to the reason that most of the patients were not of a very young age group.

In this present study a complication rate of 79%

was found and sinusitis (98%) constituted the largest complication. The various types of sinusitis complication seen are shown in table 3 with maxillary sinusitis (47%) being the most common followed by pan-sinusitis (31%). Other complication seen was frontal mucocoele/pyocoele (2%) and it was not so common with nasal polyps in this study.

A mucocoele (called a pyocoele if the contents are infected) arises when drainage from a sinus is impeded and usually occurs in the frontal sinus or in an ethmoid cells, rarely in the other sinuses⁵.

The most worrying complications of sinusitis involve the orbit and intracranial cavity⁶. Complications and local extension of paranasal sinus infections most often involve the orbit and periorbital^{5,7}.

In conclusion the nasal polyposis has been found in this study to cause the radiological changes mainly in the maxillary sinus and equally to cause sinusitis complication occurring mainly in the maxillary sinus. Due to blockage of the maxillary ostium by the nasal polyps preventing the migration of mucus from the sinus.

The plain radiographs of the paranasal sinuses demonstrated by at least the occipito-frontal, occipito-mental and lateral views would show the extent of the disease in the nose and paranasal sinuses to certain good extent.

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