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# Age-related morphological features of nasal polyps

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## OBJECTIVES

Nasal polyps (NP) are the final stage of a chronic inflammatory condition that affects the paranasal sinuses and nasal cavity. They are mainly related to chronic rhinosinusitis, but they can also be associated with aspirin-exacerbated respiratory disease, certain systemic vasculitis, and cystic fibrosis. NP are rather common, affecting 1–4% of adults, but they are less commonly described in children. In the current study, we examined the qualitative histological features as well as the characteristics of the inflammatory infiltrate observed in NP of patients of different ages: paediatric (<18 years old), adults (between 18 and 50 years old), and elderly (>50 years old).

## METHODS

By double-headed microscope, at least two independent pathologists retrospectively examined hematoxylin and eosin-stained histological slides of nasal polyps from patients followed at AOU Policlinico G. Martino over the past ten years. The agreement between observers was determined by kappa statistics (0.87, quite optimal). A total of 153 patients were included in this study, of whom 16 were children, 58 were adults, and 79 were elderly. The male-to-female ratio varied between the adult and elderly populations (3.83:1 and 3.4:1, respectively) and the paediatric population (1:1).

## RESULTS

All sixteen of the patients were found to have antrochoanal polyps in the paediatric population, but the majority of adult and elderly patients had ethmoidal polyps (44 in the adult population and 63 in the elderly one). Generally, a noticeable myxoid stroma with vascular angectasias was seen in all polyps. Additionally, a more pronounced inflammatory infiltration was seen in the paediatric group, which was primarily distinguished by the presence of many eosinophils (a condition known as an "allergic pattern") (Fig. 1A) mixed with lymphocytes. In contrast, in the adult population, inflammation was mainly represented by lymphocytes and plasma cells, frequently with a perivascular distribution as well as the formation of subepithelial lymphoid nodules (Fig. 1B). Squamous metaplasia was not rare in the superficial epithelium (Fig. 1C). Last but not least, in the elderly population, inflammation was less evident, and eosinophils were only found in organized microcystic mucus collections; moreover, cavernous-like angecthatic structures with thrombotic stratification were seen (Fig. 1D). The morphological qualitative NP features and the characteristics of the inflammatory infiltrates showed a statistically significant difference ($p$ value $< 0.05$) between the three groups.

## FIGURES

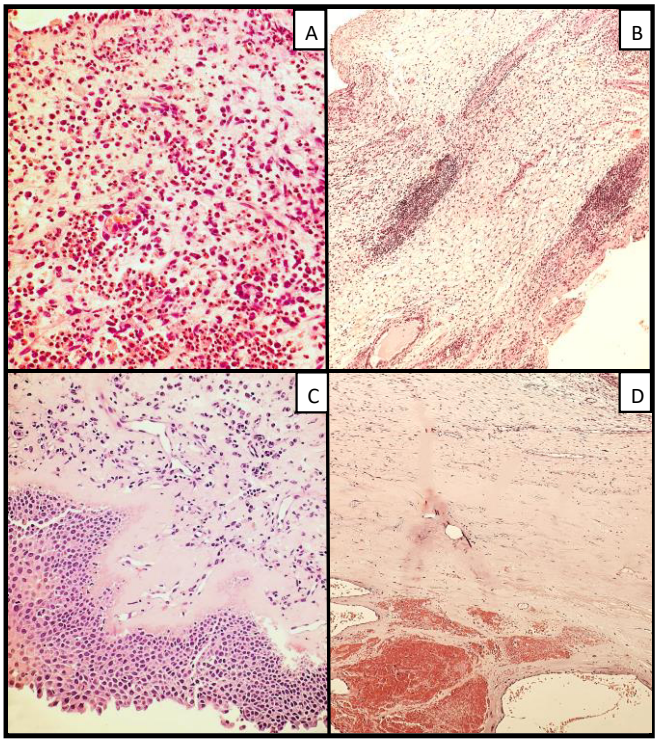


**Figure 1.** Haematoxylin and eosin stainings showing the typical appearance of a paediatric NP rich in eosinophils (A, x200), the formation of subepithelial lymphoid nodules in a NP from an adult (B, x40), the presence of squamous metaplasia (C, x100), and a less prominent inflammatory infiltrate associated with the presence of cavernous-like angecthatic structures with thrombotic stratification in a NP from an elderly (D, x40).

## CONCLUSION

Our study strongly supports the idea that nasal polyps are more common in the adult and elderly populations, while the allergic-type inflammatory infiltrate (rich in eosinophils) is prevalent in paediatric NP. This evidence suggests the idea that the clinical work-up and treatment follow-up should differ in different age categories, and such a statement is further supported by the fact that each age group is characterized by distinct histological features.

## REFERENCES

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