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Values of nasal cytology in chronic rhinitis in Mali (analysis of 100 samples)

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ABSTRACT

Background:

Chronic rhinitis are frequent diseases in rhinologic pathology in Mali. Nasal cytology represents a valid method in the differential diagnosis of allergic and non-allergic nasal diseases

Objective:

The aim of this prospective study was to assess the usefulness of nasal exudate in the diagnosis of different types of rhinitis.

Materials and Methods:

Fifty four patients [34 were female and 20 male, between the age groups of 6-51 years, mean age 27 years] with chronic rhinitis were recruited and evaluated for the following variables : symptoms and signs of chronic rhinitis, paranasal sinus radiograph, and nasal cytology.

Forty six normal and healthy persons served as controls.

Mucosal cytology samples were gathered by cytobrush, the material is stained by the May-Grunwald-Giemsa method, which allows the detection of all the cellular components of the nasal mucosa. The slide is then observed through a light microscope.

Results:

Nasal cytology showed that the rates of the cells (eosinophils and neutrophils) in the control group (N = 46) were negligible and have not exceeded the normal values.

Comparisons for eosinophil and neutrophil counts showed that there were statistically significant differences between the CR group (isolated chronic rhinitis) and the control group (with no rhinitis) ($p < 0.001$).

Conclusion:

Nasal cytology deserves its place in our diagnostic arsenal of inflammatory chronic rhinitis. This is an easy, reliable and cheaper method. It allows in the absence of some means of diagnosis indicated in the opportunity to move in order to treat patients.

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Introduction:

Chronic rhinitis are frequent diseases in rhinologic pathology in Mali. In our service they represent approximately 35% of the throat Nose and ear diseases. Etiological factors are varied (environment, nasal deformity, tumor, dystonia ...). The contribution of paraclinical investigations is often decisive for the diagnosis. The method of examining the nasal mucosa was first described by Hansel in 1934 [1, 2]. The first cytological examinations in small children were performed by Matheson et al. [3]. The nasal mucosa is the most accessible part of the respiratory tract epithelium, and the picture resulting from cytology accurately reflects all the ongoing processes in the mucosa. Nasal cytology is, however, rarely performed in practice despite its simplicity and experts' recommendations [4-6].

Nasal cytology represents a valid method in the differential diagnosis of allergic and non-allergic nasal diseases, as it is simple, safe, non-invasive, cost-effective, and easy to perform both in the medical and paediatric office [7]. A further approach to assess the variations in nasal inflammation is nasal cytology, which was proposed as a nasal test in the 1970s [8] and later showed the characteristics to be used in clinical practice [9, 10].

OBJECTIVE

The aim of this prospective study was to assess the usefulness of nasal exudate in the diagnosis of different types of rhinitis.

MATERIALS AND METHODS

The study was conducted in the Unit of the Ear, nose and throat diseases, reference health center in the District IV of Bamako (MALI) between February and December 2013.

Fifty four patients [34 (62,96%) were female and 20 (37.04%) male, between the age groups of 6-51 years, mean age 27 years] with chronic rhinitis were recruited and evaluated for the following variables : symptoms and signs of chronic rhinitis, paranasal sinus radiograph, and nasal cytology.

Forty six normal and healthy persons served as controls (with an age between 2 and 55 years (Mean 28 years); of these, 30 (60%) were male and 20 (40%) female.

In addition, patients must have been untreated for chronic rhinitis from at least 7 days before nasal cytology to avoid influence of drugs on the rhinocytogram. Mucosal cytology samples were gathered by cytobrush, histological samples were obtained from the inferior and middle turbinates.

When the sampling is obtained, the material is placed on a glass slide, fixed by air drying, and stained by the May-Grunwald-Giemsa method, which allows the detection of all the cellular components of the nasal mucosa, including those cells that are associated with the immune inflammation process (such as neutrophils, eosinophils, lymphocytes, and

mast cells). The slide is then observed through a light microscope. For the rhinocytogram analysis, at least 50 microscopic fields have to be read in order to detect all the cells present in the sample.

RESULTS

Nasal cytology showed that the rates of the cells (eosinophils and neutrophils) in the control group (N = 46) were negligible and have not exceeded the normal values: eosinophils: 0 - 4% and 35 to 70% for the neutrophils ($p<0.0001$). Comparisons for eosinophil and neutrophil counts showed that there were statistically significant differences between the CR group (isolated chronic rhinitis) and the control group (with no rhinitis) ($p < 0.001$):

The rates of cells in the CR group:

Eosinophils (=0) = 26 cases (35.13%), Eosinophils (= 1-4%) = 12 cases (16.21%),

Eosinophils (> 4%) = 36 cases (48.64%) ($p<0.0001$).

Neutrophils (= 0) = 3 cases (4.05%), Neutrophils (= 40 - 70%) = 20 cases (27.02%),

Neutrophils (>70%) = 27cases (36.48%) ($p<0.0001$).

DISCUSSION

Nasal cytology is a paraclinical investigation in Rhinology, which is rarely used in sub-Saharan Africa, our study to confirm his place in the diagnostic arsenal of nasal chronic inflammatory diseases in tropical environments, which are confronted with quite some unfavourable factors (pollutions, allergy, social inequalities in health…) [1, 7, 11,12].

Nasal cytology is a very useful diagnostic tool in nasal disorders, being able to detect both the cellular modifications of the nasal epithelium caused by either allergen exposure or irritative stimuli (that may be physical or chemical, acute or chronic), or inflammation.

Over these past few years, nasal cytology has allowed to identify new disorders, such as the non-allergic rhinitis with eosinophils (NARES), the non-allergic rhinitis with mast cells (NARMA), the non-allergic rhinitis with neutrophils (NARNE), and the non-allergic rhinitis with eosinophils and mast cells (NARESMA). The rhinocytogram is actually able to distinguish the different forms of allergic rhinitis and to suggest the appropriate treatment, such as antinflammatory drugs or allergen immunotherapy [13]. Preventive treatment of nasal diseases, when guided by rhinocytograms, leads to a favorable clinical and time-dependent outcome. These advantages are reflected in a better quality of life and in a reduction in National Health Service costs, without chronic evolution of the disease to complications [7].

Our cytogramms have shown the place of various allergic and non-allergic inflammatory processes in chronic diseases of the nasal mucosa. In addition, they allow not only to guide the practitioner on its pathologies with the diagnostic resources limited in the absence of tests sophisticated diagnosis, as is the case in our conditions, but also to lead a guided therapy according to the values of the types of cells found. The values of the obtained nasal Eosinophilia to not to neglect the allergic etiology in chronic rhinitis in our unity, as mentioned in many studies [1, 11, 14-18].

CONCLUSION: Nasal cytology deserves its place in our diagnostic arsenal of inflammatory chronic rhinitis. This is an easy, reliable and cheaper method. The analysis of the cytograms of our study highlighted especially the importance of the factor of hypersensitivity in the occurrence of chronic inflammatory diseases within our unit. It allows in the absence of some means of diagnosis indicated in the opportunity to move in order to treat patients.

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