

# RHINITIS IN EARLY CHILDHOOD: EFFICIENCY AND HARMLESSNESS OF A NEW INTRANASAL CORTICOSTEROID

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## ABSTRACT

Fluticazone propionate (FP) is a new local corticosteroid which is twice as efficient than as beclometazone dipropionate with minimal oral biopresence following intranasal application. Its effect was studied in a total of 400 children aged 4-12 years monitored in 10 of the geographic regions. The efficiency of the drug was assessed by means of daily records registering the individual accompanying symptoms, nasal obstruction, choryza, sneezing, etc. Three groups of patients were investigated: 1) treated with 100 $\mu$ g FP; 2) treated with 200 $\mu$ g FP and 3) placebo group. The results of the clinical study confirmed that 100 and 200 $\mu$ g FP administered once daily suppressed all the typical symptoms of the seasonal allergic rhinitis in childhood.

**Key words:** fluticazone propionate, allergic rhinitis, therapy, efficiency, children

## INTRODUCTION

Allergic rhinitis is a very common disease in early childhood which is, however, often misdiagnosed and mis-treated. Surveys of the population have shown that its incidence varies between 6-12% (1,5,9,10). In half of the children the disease begins at the age of 2-4 years. Rhinitis is most common in boys aged 8-12 years. During childhood the incidence rate is steady and the condition seldom dies away without being treated (1). Complete recovery occurs in 10% only, 50% of the children show improvement, 30% remain unaffected and in 10% exacerbation is observed (11). In spite of the fact that the condition is not life-threatening, allergic rhinitis is accompanied by sneezing, choryza, nasal irritation and obstruction which may become so severe that they may interfere with the normal daily activities and cause disturbances in the normal functioning of the patients. When untreated, the nasal obstruction often causes complications such as dysfunction of the Eustachian tube, hearing damage and obstruction of the osteomeatal complex with possible development of paranasal sinus infections.

It is known that the pathogenesis of allergic rhinitis is determined by the sequence of events at cellular level and release of other mediators apart from histamine which are manifested by nasal mucosa inflammation (8). Treatment should begin early to suppress inflammation and the development of chronic nasal symptoms or other complications. The antiinflammatory drugs have proved their efficacy as a therapy in patients with rhinitis and the corticosteroids are

highly efficient in suppressing the characteristic symptoms of the disease (8). The initial idea when applying local drugs stems from the desire to avoid the side effects typical of the systemically applied medicines. Besides, it has been proved that the local drug administration is important in its own self since the therapeutically equivalent dose does not necessarily help to achieve the same positive effect (7). At the same time, in children, the local corticosteroids are not considered an acceptable choice for treatment (8) because of the risk for side effects related to the suppression along the hypothalamus-pituitary-adrenal axis and for dysfunction of the bone metabolism with retarded growth (4).

The ideal corticosteroid for the treatment of allergic rhinitis in childhood should be a combination of pronounced local efficacy and low general activity. Fluticasone propionate is a new local corticosteroid which is twice as powerful than beclometasone dipropionate with minimal oral biopresence following intranasal administration. Previous clinical trials with FP soluble nasal spray (FPNS) have shown that the drug has scarce general corticosteroid activity, it seems to be perfect for treatment of allergic rhinitis in children (2). In order to assess the FPNS efficiency and the tolerance three randomised double-blind placebo-controlled clinical trials were undertaken in children with seasonal allergic rhinitis.

## MATERIAL AND METHODS

A total of 400 children aged 4-12 were studied in 10 centres in Bulgaria. All of them responded positively to the skin test to known seasonal allergens in the corresponding geographical region. The studies were conducted during the season in which the allergens were active. Besides, the criteria included the symptoms characteristic of seasonal rhinitis, e.f. nasal obstruction, choryza, eye irritation, etc. on

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the day of examination. The requirement was that these symptoms had to be moderately severe during at least one of the previous seasons.

The clinical trial included 143 children with seasonal allergic rhinitis, of whom 47 received 100µg FPNS once a day, 46 received 200 and 100µg FPNS once a day and 50 - placebo, once daily in the morning. The patients were also given antihistamine tablets to suppress the symptoms left uncontrolled by the main treatment.

The efficiency of the applied treatment was evaluated by means of daily recording of the accompanying symptoms such as sneezing, choryza, nasal obstruction on awakening and during the day, nasal and eye irritation, etc. The patients also had to record the additional treatment received during the day with antihistamine drugs (3).

The period of treatment was followed by a weak's period of monitoring. The patients were randomly selected for treatment with FPNS in a dosage of 100µg and 200µg, respectively, and the third group received a placebo. All the groups were administered treatment once a day, in the morning. The patients had to record the severity of symptoms by means of the visual analogue scale (0=lack; 100 = severe form) for each of the symptoms. The efficiency was evaluated by medical specialists by means of the visual analogue scale regarding the symptoms, and by the patients/parents regarding the severity of the nasal symptoms (nasal obstruction only) in the morning and the severity of symptoms during the day. The overall effect of the administered treatment was given by the physicians at the end of each period of treatment.

In all three trials the harmlessness of the treatment was determined by the registered side effects on every visit. Before the beginning of active treatment and at its end hematological, biochemical and urinary analyses were performed.

## RESULTS AND DISCUSSION

During the clinical trial the patients treated with FPNS of 100µg and of 200µg once daily showed improvement in their average assessment of their nasal symptoms for each of the monitored symptoms which were significant as compared to the placebo group. The only exception was that of nasal irritation which was significantly improved only in the group treated with FPNS of 200µg once a day. Regarding the improvement in the nasal symptoms assessment no significant difference was observed between the groups treated with 100µg and 200µg once a day.

The watering and irritation of the eyes were not affected in the patients treated with 100µg and 200µg FPNS as compared to the placebo.

When comparing the patients treated with 100µg FPNS with the placebo group, the additional administration of antihistamine drugs was reduced significantly in the first group.

In comparison to the placebo group, the patients treated actively with 100µg and 200µg FPNS once a day demon-

strated considerable improvement of their symptoms. No significant differences was established between the two groups of the actively treated patients.

In all three groups (placebo, 100µg FPNS and 200µg FPNS once a day) no difference were observed in the registered side effects. The reported side effects were usually mild and related to rhinitis. Treatment with fluticasone propionate did not influence the morning level of serum cortisol and the 24-hour excretion of cortisol in urine.

## CONCLUSION

The results of our trial confirm that FPNS 100µg and 200µg once a day has advantages over the placebo in suppressing the symptoms characteristic of seasonal allergic rhinitis in childhood. The combination of powerful effect and low general activity of FPNS demonstrates the efficiency of the drug in comparison with the placebo and the advantage of low percentage of side effects in this age group. Axis in children treated with 100µg and 200µg FPNS according to the results from the investigation of the morning levels of serum cortisol (6), or, when using more susceptible methods such as the monitoring of the 24-hour excretion of free cortisol in urine. Since bone metabolism is considered a more sensitive indicator of the general effect of the inhaled corticosteroids in comparison to the changes in corticosteroid excretion with urine (4), it would be of interest to evaluate the effect of FP on bone metabolism. In a previous trial we have shown that a 2-month treatment with beclometazone dipropionate of 200 or 400µg daily does not affect bone metabolism in children with seasonal allergic rhinitis.

FPNS of 100µg daily would be an efficient and well-tolerated treatment in children with allergic rhinitis.

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