Allergic diseases in children with recurrent aphthous stomatitis. The making up of a regimen as an element of the medical treatment of the illness

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Summary

Repeatedly occuring aphthas are among the most common recurrent oral lesions in childhood. A group of factors are considered to have an effect on the development of the disease - recurrent aphthoust stomatitis (RAS). Those are local traumata, microbial factors, food factors (food deficiencies, food allergies), some general illnesses, etc. The study of these factors in childhood shows that allergic conditions occur more frequently in children with RAS.

A new palliative method of treatment of the condition is the regulative regimen. It does away with the most common food allergens causing the repeated occurrence of RAS. The regimen can also be a part of a complex course of treatment.

Keywords: recurrent aphthous stomatitis (RAS), food deficiency, food allergy, intradermal allergic test, elimination diet.

Introduction

Repeatedly occuring aphthous ulcerations are among the most common recurrent oral lesions in childhood. Different exogenous and endogenous factors play part in the etiology of the illness. These factors are interdependent, and, as is the case with many other diseases, some are of decisive importance, while others are just a background against which the condition develops. In all cases the immune system is involved, as in the mouth cavity numerous immunopathological factors interplay – those are bacterial and medicinal factors, as well as other factors of organic or inorganic nature [1,2,3,4,5,6].

Relevant literature states that some 10% of the population suffers from recurrent aphthous stomatitis (RAS). A group of factors is considered to have an immediate effect on the development of the condition [7,8,9,10,11]. Those are local trauma, microbial factors, food factors (food deficiencies, food allergies), some general illnesses, etc. [12,13,14,15]. Studies of the impact of these factors show that allergic diseases are common among children with RAS.

A food allergy can cause the appearance of RAS in certain children, some authors being of the opinion that chemical compounds in certain foods are more likely to combine with epithelium proteins and form covalent protein compounds if the organism concerned is sensitized. As far as they are concerned, the covalent protein compounds cause an allergic reaction of the IV type (decelerated supersensitivity). On the other hand, the crosswise reaction between antigens and food allergens in the mouth cavity can bring about a cellular immune response causing lesions in the mucous membrane of the mouth [16,17,18,19,20].

A new palliative method of treatment of the condition is the regulative regimen [19].

It does away with the most frequent food allergens causing the repeated occurrence of aphthas. The regimen can also be a part of a complex course of treatment.

It is the aim of this publication to determine the frequency of allergic diseases in children with recurrent aphthous stomatitis (RAS). Another aim is to work out a regimen that could be a part of the illness treatment.

The accomplishment of this aim will involve the achieving of the following goals:

1. A study of the frequency of the concurrent allergic diseases in children with RAS.

2. An establishment of the influence different foods have on the occurrence of recurrent aphthas in children – intradermal testing with food allergens will be employed.

3. The application of an individual elimination diet in the children tested and proving the stimulative effect of some foods when relapses occur.

Material and methods

The study was carried out on 60 children aged 1-15 treated at the Children's stomatology department for recurring oral lesions that we diagnosed as recurrent aphthous stomatitis (RAS).

Data from the anamnesis and the clinical status of each child were registered on a special statistical file. The file included a detailed case history of the concurrent illnesses that could be a factor for the occurrence of recurrent aphthas. Each separate clinical status was described in terms of criteria determined in advance.

A control group of 110 children without RAS and of the same age was randomly selected. Children in the control group only had to have the concurrent illnesses that could prove to be a factor in the relapse of aphthas in children with RAS.

The comparative data were statistically processed through a variational, alternative, one-factor, dispersive, non-parametrical analysis.

In the case of 14 children (8 girls and 6 boys) with recurrent aphthas in a period of remission and a case history of allergic conditions, an intradermal allergic test was conducted by means of food allergens.

Children who reacted positively to the allergen were subjected to a three-week course of regimen.

First week: hypo-allergic diet. Children and their parents were instructed to exclude from their diet foods like: milk and dairy products, meat and sausages, eggs, kernels, tomatoes, beans, citrus fruits, chocolate. A diet of rice and potato meals and allowed vegetables was recommended.

Second and third week: Following the first week, every fourth day, one of the foods the child had proven allergic to during the testing was included again in the menu.

During the whole period of the experiment the data concerning the occurrence of aphthas – their size and place of occurrence, as well as the time of their epithelisation – were registered in a special diary. The children were examined once a week.

Results

1. Frequency of concurrent allergic diseases in children with RAS

An analysis was made of the health status and the concurrent general illnesses most common in children with RAS. A pattern of repeating factors was disclosed by the data:

- frequent illnesses of the throat and the upper respiratory channels – in 63.33% of the children with RAS;
- allergic diseases – in 55% of the children with RAS;
- indigestion – in 26.67% of the children with RAS;
- hereditary predisposition – in 20% of

the children with RAS;

- stress and shyness – in 16.67% of the children with RAS;

- previous mouth-staphylococcal infections – in 13.33% of the children with **RAS**.

In more than half of the children a concurrent allergic condition is registered. Compared to the control group, the frequency of allergic conditions in children with RAS shows a clear link between the two illnesses, as illustrated by *Table 1*.

Table 1. Frequency of concurrent allergic diseases in children with RAS

Children groups	**Children with RAS**			**Children without RAS**		
	Number	%	Sp	Number	%	Sp
Children with concurrent allergic diseases	33	55.00	4.74	20	18.18	3.68
Children without concurrent allergic diseases	27	45.00	4.74	90	81.82	3.68
Total	60	100	-	110	100	-

55% of the children with **RAS** have a case history with concurrent allergic conditions. It has been established that there is a statistically significant correlation between the frequency of the concurrent allergic conditions and the occurrence of recurrent aphthas ($X^2 = 24.528$, $P = 0.001$). Children suffering from allergic diseases have a three times bigger chance of having a relapse of recurrent aphthas (odds ratio = 3.025 95% CI [1.91; 4.78]).

The distribution of the different types of allergic diseases in children with recurrent aphthas is illustrated by *Table 2*.

Food allergy and polyallergy are 1/3 of the concurrent allergic diseases occuring in children with RAS. Another 30% are allergic rhinitis, asthmatic bronchitis and atopical disease (endogenous eczema). The difference between food allergy, polyallergy and other types of allergies is statistically significant ($P<0.05$).

Allergic diseases are a particularly important factor in children with RAS. Food allergy and the even more serious polyallergy play a clear part in the occurrence of aphthas.

2. An estimate of the influence of different foods on the emergence of recurrent aphthas in children intradermally tested with food allergens

14 children (8 girls and 6 boys) with recurrent aphthas in a period of remission and with a history of allergic conditions were subjected to an intradermal test with food allergens.

Table 2. Distribution of concurrent allergic diseases in children with RAS

Concurrent allergic diseases	**Number**	**%**	**Sp**	**t**	**P**
Food allergy	11	33.33	8.21	0.26	>0.05
Polyallergy	10	30.30	8.00		
Allergic rhinitis	6	18.18	6.71		
Asthmatic bronchitis	4	12.12	5.68		
Atopical disease	2	6.07	4.15		
Total	33	100	-		

In four of the children tested – as registered by the anamnesis – aphthas appeared after the children took specific foods. 10 of the children tested had a positive dermal reaction to part of the food allergens. The data concerning the dermal reactions to specific food allergens are illustrated by *Table 3*.

Most consequential are the "+" food allergens of cow milk and tomatoes. Veal and walnuts rank second in consequence of food allergens. Egg yolk, carrots and peas rank third with 3 "+" tests each. Chocolate, peanuts and egg white rank fourth with 2 "+" tests each. The biggest group – mutton, pork, chicken, beans, almonds and soya beans – rank fifth with one positive reaction in some of the children only.

Table 3. Frequency of the effect of food allergens in terms of number of positive dermal reactions caused in children with RAS

FOODS	Number of "+" skin tests in children with RAS					
	0	**1**	**2**	**3**	**4**	**5-6**
	lamb fish potatoes honey	sheep milk pork chicken beans almonds soya beans	egg white chocolate peanuts	egg yolk carrots peas	veal walnuts	cow milk tomatoes

Only four foods evoked no positive reactions in the children tested. So, because of the big variety of food allergens that did bring about a "+" skin reaction and because of the relatively small number of children tested, we had to look for additional proofs of there being a linkage between the consumption of certain foods and the occurrence of recurrent aphthas.

3. The individual elimination diet – a regimen proving the stimulative effect certain foods have on the emergence of recurrent aphthas in children

The children tested were subjected to an elimination diet consisting in the periodic inclusion of a food that had proven capable of causing a positive skin reaction. Results from the experiment show that – with the exception of two children studied – in one half up to one third of the other children with positive allergic reactions to foods aphthas occur too. We called such food items stimulative foods.

Table 4 illustrates the generalised data on the effect of stimulative foods in terms of aphthas evoked.

It is clear from *Table 4* that – with the exception of two children – in the remaining majority of children with positive allergic reactions to foods aphthas occur too. All in all the frequency of the effect of allergens of stimulative foods causing aphthas is 50% up to 66%.

Table 5 illustrates the different effect specific types of stimulative food have on the emergence of aphthas in children.

Interestingly enough, kernels, tomatoes and meat – mostly veal – have the strongest effect of stimulating the emergence of recurrent aphthas. Milk, as strong allergen, acts pretty directly to produce recurrent aphthas too.

We can assume that these are the basic types of food that normally play part in the occurrence of recurrent aphthas in children. This is the reason why we recommended that such foods were excluded from the diet of children with recurrent aphthas. The regimen was applied within a wider complex medical treatment of the disease.

Table 4. Frequency of the effect stimulative foods have on the emergence of aphthas in children

Children	Number of +skin tests	Stimulative foods	Stimulative foods %
1	5	3 - cow milk, tomatoes, peas	60%
2	4	3 - cow milk, tomatoes, walnuts	75%
3	8	5 - pork and chicken; chocolate, peanuts, walnuts	75%
4	3	2 - cow milk, peanuts	66%
5	5	3 - cow milk, beef, tomatoes	60%
6	2	0	0%
7	2	0	0%
8	4	3 - veal, tomatoes, peas	75%
9	4	2 - carrots, tomatoes	50%
10	3	2 - chocolate, walnuts	66%

Table 5. Foods stimulative of the emergence of recurrent aphthas in children

Types of food	Frequency of stimulation	
	number	%
Milk	4	16%
Tomatoes	5	21%
Kernels	6	26%
Meat	5	21%
Chocolate	2	8%
Peas	1	4%
Carrots	1	4%

Conclusions

1. Half of the children with recurrent aphthas suffer from allergic conditions too, food allergies being the most important type of allergy here.

2. 10 out of 14 children with RAS and a concurrent allergy had a “+” skin reaction to food allergens.

3. Cow milk and tomatoes, in the first place, veal and walnuts, in the second place, and egg yolk, carrots and peas, in the third place, have the strongest effect of causing a “+” skin reaction.

4. Lamb, fish, potatoes and honey do not have the effect of causing a “+” skin reaction.

5. Foods – tomatoes, kernels, meat, milk – are the strongest stimulant conducive to the emergence of recurrent aphthas.

6. A regimen – taking account of the effect of stimulative foods – can be a suitable complement to the medical treatment of RAS in children with concurrent allergies.

In conclusion, it is our aim – by attracting the interest of specilists to the results of this study – to stress the effect allergic diseases, food allergies in particular, have on the emergence of recurrent aphthous stomatitis, as well as to point at the ensuing possibilities for application of a suitable regimen within a complex medical treatment of the condition.

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