

Nasal Disease Management by Using Aqua Maris Solution

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ABSTRACT

As it is well known, one significant characteristic of the airway mucosa *in vivo*, that cannot easily be mimicked *in vitro*, is its microcirculation, which generates a highly dynamic, biologically active milieu of plasma-derived molecules. Nasal irrigation, as an adjunctive treatment, is effective in improving symptoms and the health status of patients with sinonasal disease. Patients with allergic rhinitis (15 patients), bacterial acute (10 patients) and chronic (5 patients) rhinosinusitis from age of 8 months to 11 years old were under observation during the 2002 - 2004 years period. The control group included patients with the same age and diagnose. Among allergic rhinitis patients 6 patients (40%) suffered with bronchial asthma, *St. Aureus* and *S.Pyogenes* were predominated in nasal flora in patients with bacterial rhinosinusitis. During the whole follow - up period patients indicated nasal disease - specific symptoms, as follows: sneezing, secretion type, blockage / nasal obstruction, nasal itching, rhinorrhea, sensation of nasal pain, completed questionnaire for quality of well - being before starting the adjuvant treatment, after 2 weeks, after 4 weeks and during the exacerbation periods: for allergic rhinitis and bacterial rhinosinusitis. Both groups received the same basic treatment. Clinical group received adjuvant therapy by Aqua Maris, an isotonic sterile saline solution of Adriatic Sea with natural microelements, which does not contain any preservative agent, for 2 drops in nasal cavity 3 times a day from 2 up to 4 weeks. According to the clinical observations and study results as well as patients' personal appreciation of quality of life we can recommend Aqua Maris as an adjuvant therapy during various nasal diseases. We found such type of treatment safe, effective and cheap which is most important for everyday clinical practice.

KEYWORDS: *sinonasal disease, nasal irrigation, saline solution*

One significant characteristic of the airway mucosa *in vivo*, that cannot easily be mimicked *in vitro*, is its microcirculation, which generates a highly dynamic, biologically active milieu of plasma-derived molecules that may pass to the airway lumen *in vivo* [9]. Chronic rhinosinusitis is a condition that is very difficult to treat and can be very disabling to the patients. Predisposing factors include ciliary impairment, allergy, nasal polyposis and immune deficiency [2]. Nasal disease, including chronic rhinosinusitis and allergic rhinitis, is a significant source of morbidity. Nasal irrigation, as an adjunctive treatment, is effective in improving symptoms and the health status of patients with sinonasal disease [10]. Controversial data exist about saline solution treatment. For instance, in some studies, it is suggested, that buffered hypertonic and normal saline sprays both improve mucociliary clearance and should therefore be beneficial in conditions such as rhinitis and sinusitis, which are associated with disruption of mucociliary clearance [7]. Previous studies have shown that corticosteroid nasal sprays and topical decongestants containing preservative benzalkonium chloride (BKC) damage respiratory mucosa, decrease mucociliary activity, and inhibit neutrophil functions *in vitro*. Saline solutions without BKC appear to be safer. Alternatives and additional studies are needed to determine the clinical significance of these findings [3]. Through different mechanisms the hypersaline exposure may also improve the recovery of soluble indices in human nasal airways [5]. There was no significant difference between the basal mucociliary clearance and the 20th minute mucociliary clearance of 0,9% NaCl solution group - in patients with acute bacterial rhinosinusitis [6]. Hypersaline nasal irrigation in seasonal allergic rhinitis during the pollen season, for 6 weeks, was tolerable, cheap and effective [4]. The problem is particularly important in the treatment of infantile rhinitis for which the use of saline solution alone is often preferred. The study emphasizes the fluidifying effect of the saline solution and polysorbate on nasal mucous and the complete absence of side effects [8].

MATERIAL AND STUDY DESIGN

A case - control open clinical study was carried out. Patients with allergic rhinitis (15 patients), acute bacterial (10 patients) and chronic (5 patients) rhinosinusitis from age of 8 months to 11 years old were under observation. The control group included patients with the same age and diagnose. The study period covered the 2002 - 2004 years period. Among allergic rhinitis patients 6 patients (40%) suffered with bronchial asthma, *St. Aureus* and *S.Pyogenes* were predominated in nasal flora in patients with bacterial rhinosinusitis.

During the whole follow - up period patients indicated nasal disease - specific symptoms, as follows: sneezing, secretion type, blockage / nasal obstruction, nasal itching, rhinorrhea and corresponding sensation (or by touching nasal pain); and completed questionnaire for quality of well - being before starting the adjuvant treatment, after 2 weeks, after 4 weeks and during the exacerbation periods: for allergic rhinitis during pollen season and for bacterial rhinosinusitis during recurrent upper respiratory tract infection periods.

All patients in both groups received the same basic treatment. We follow step - wise treatment for allergic rhinitis (1) and in bacterial rhinosinusitis - the consultations of ENT specialist in addition. Clinical group received adjuvant therapy by Aqua Maris ("JADRAN", Croatia), an isotonic sterile saline solution of Adriatic Sea with natural microelements (Na^+ , Ca^{2+} , Mg^{2+} , Cl^- , SO_4^{2-} , HCO_3^-). Aqua Maris nasal drops do not contain any preservative agent. Patients used nasal saline solution to irrigate, to clean (especially infants) or 2 drops in nasal cavity 3 times in a day from 2 up to 4 weeks.

RESULTS

Patients receiving Aqua Maris indicated improvement quality of well - being after 1 to 2 weeks of treatment, though rhinorrhea was troublesome symptom for longer period 5 ± 1 week. As for secretion type, thick mucous discharge from nasal cavity was replaced by serous watery secret during 2 to 3 weeks of treatment. Patients

with nasal blockage/obstruction rated the effectiveness of treatment by reducing feeling of dryness and irritation of nasal mucosa. In cases of bacterial rhinosinusitis the treatment period to relief the symptoms was shorter for $7\pm 3,2$ days vs $10\pm 2,4$ days. During allergic rhinitis Aqua Maris reduced the use of systemic drugs in 7 patients (46,6%). Nasal drops in up to 2 years of age children were well tolerated, they had no complication in addition to the symptoms of the main disease.

CONCLUSION

According to the clinical observations and study results as well as patients' personal appreciation of quality of life we can recommend Aqua Maris as an adjuvant therapy during various nasal diseases. We found such type of treatment safe, effective and cheap which is most important for everyday clinical practice.

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Раствор Aqua Maris при заболеваниях носовой полости

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РЕЗЮМЕ

Согласно литературы, одним из характерных признаков слизистой оболочки дыхательных путей *in vivo*, который *in vitro* выявить нелегко, является микроциркуляция слизистого слоя, которая образует динамическую, биологически активную среду молекул из плазмы. Назальная ирригация эффективно улучшает симптомы и качество жизни пациентов с синусоназальными заболеваниями. Этот тип лечения применяется как дополнительный. Клиническое исследование проводилось с целью уточнения эффективности препарата AQUA MARIS ("JADRAN", Croatia) в комплексном лечении больных с различными заболеваниями носовой полости и околоносовых пазух: аллергический ринит (15 больных), бактериальный острый (10 больных) и хронический (5 больных) риносинусит в возрасте от 8 месяцев до 11 лет. Клинические наблюдения проводились в 2002 - 2004 гг. В контрольную группу вошли пациенты с аналогичным диагнозом и того же возраста. Пациентам обеих групп проводилось общепринятое этио-патогенетическое лечение. Больным основной группы дополнительно были назначены назальные капли AQUA MARIS по 2 капли три раза в день в течение 2-4 недель. Оценка клинических симптомов и качества жизни пациентов проводили через 2-4 недели от начала лечения, а также в периоды обострения при аллергическом рините и бактериальном риносинусите. Результаты исследований позволяют рекомендовать назальные капли AQUA MARIS как вспомогательную дополнительную терапию при различных заболеваниях носовой полости и околоносовых пазух. Считаем метод безопасным, эффективным и экономически оправданным, что столь важно в повседневной клинической практике.

Ключевые слова: заболевания носовой полости и околоносовых пазух, назальные капли