INTRANASAL SPRAY WITH ACETYLCYSTEINE FOR ACUTE RHINOSINUSITIS TREATMENT: WHAT A PHARMACIST SHOULD KNOW

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Introduction. In Ukraine, acute rhinosinusitis (ARS) treatment is regulated by European guidelines – European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS 2020), which is addressed not only to general physician, otolaryngologists and pharmacists but also to patients who use over-the-counter drugs to treat this pathological condition, often based on the pharmacist's recommendations. Acetylcysteine (AC) is commonly used for respiratory and sinus conditions due to its mucolytic effects as an adjunct treatment for treating infection (bacterial biofilm destruction), reducing swelling, and improving mucus drainage. The hypertonic sodium chloride (SChl) solution as saline irrigation (saltwater rinses) and tuaminoheptane sulfate (TS) may be used in combination with AC to achieve the best results.

Aim. Comparative analysis of nasal sprays with AC based on evaluation of their effectiveness and safety in ARS symptomatic treatment.

Materials and methods. The theoretical study was conducted as part of the master's thesis «Clinical and pharmaceutical analysis of drugs for acute rhinosinusitis symptomatic treatment» as a comparative analysis of nasal sprays containing acetylcysteine and registered in the pharmaceutical market of Ukraine.

Results and discussion. Only two nasal sprays containing acetylcysteine are registered on the pharmaceutical market of Ukraine. These are Rinofluimucil and Flu-Acyl Rino. Their comparative characteristics are presented in tab. 1.

Table 1

Comparative characteristics of nasal sprays with acetylcysteine

Nasal spray	Active substances (1 ml)			SP [4]	Use in children
	AC [1], mg (%)	TS [2], mg	SChl [3], mg (%)		
Rinofluimucil	10 (1%)	5	–	BChl [5]	Over 12 years
Flu-Acyl Rino	60 (6%)	–	30 (3%)	–	Over 3 years

Notes:

1) [1] AC – acetylcysteine;
2) [2] TS – tuaminoheptane sulfate;
3) [3] SChl – sodium chloride;
4) [4] SP – synthetic preservative;
5) [5] BChl – benzalkonium chloride.

Analyzing the available data, it can be assumed that, given the AC in each spray, the main expected pharmacodynamic effect is a mucolytic effect. However, the concentration of acetylcysteine in 1 ml in Flu-Acyl Rino is higher than in Rinofluimucil (60 mg/ml vs 10 mg/ml), which suggests a more pronounced mucolytic effect. It should be noted that AC in Flu-Acyl Rino is presented in the form of N-AC, which also enhances the mucolytic effect. The presence of TS (sympathomimetic amine) in Rinofluimucil provides vasoconstrictor effect without systemic effects. However, there are

contraindications for its use, for example, cardiovascular disease, including hypertension. Flu-Acyl Rino also has a decongestant effect, but its development is ensured by 3% hypertonic SChl solution. Such a composition provides, in addition to a double mucolytic effect, and a decongestant effect in the absence of the above contraindications. The indisputable advantage of Flu-Acyl Rino is the absence of a synthetic preservative (benzalkonium chloride), which indicates the safety of its use in patients with allergies. It should be noted that Flu-Acyl Rino can be prescribed over 3 years-old children vs Rinofluimucil, which is prescribed over 12 years-old children.

Conclusions. Acetylcysteine in nasal spray provides a mucolytic effect in acute rhinosinusitis treatment when the main complaint is thick nasal discharge. However, there are many factors to consider when choosing a nasal spray, including nasal discharge viscosity, patient age, and comorbidities. Only with the correct analysis of the above factors, acute rhinosinusitis treatment can be effective and safe.

CURRENT ASPECTS OF THE CLINICAL APPLICATION OF MONOCLONAL ANTIBODY PREPARATIONS FOR THE TREATMENT OF COVID-19

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Introduction. Despite widespread availability of SARS-CoV-2 vaccines, a number of people are either under-vaccinated or, because of individual differences, are unable to develop sustained immunity, which greatly increases the risk of severe COVID-19. World clinical practice has accumulated sufficient data confirming the effectiveness of using recombinant neutralizing human monoclonal IgG1-antibodies (PMCA) acting against SARS-CoV-2 like natural antibodies and targeting the S-protein of coronavirus in such situations, especially in the first days of the disease.

Aim. The aim of this study was to update data on the use of monoclonal antibody preparations in COVID-19 treatment regimens on the basis of a review of the current scientific literature.

Matherials and methods. In this work we used the method of theoretical analysis (review of the scientific literature, the depth of the search for 5 years, on the theme of the work).

Results and discussion. On the basis of analysis of more than 98 printed and internet publications about the use of pAbs and mAbs we have established that bamlainivimab, etesivimab, casirivimab, imdivimab, sotromivab and regdanvimab are included in the treatment standards for COVID-19 in most countries of the world. The evidence for approval of monoclonal antibodies is based on randomised, double-blind, placebo-controlled clinical trials and is recommended for use in patients with mild to moderate COVID-19 who are at high risk of developing severe disease. Due to the short duration of action of pAbs and mAbs and the appropriateness of using them only at the beginning of the disease, combining them (the so-called "cocktail" of antibodies) seems promising. The effectiveness of such "cocktails" is confirmed by studies comparing monotherapy of one representative of monoclonal antibodies and combinations of monoclonal antibodies with other representatives of this group. For example, in February 2021 the FDA (USA) approved the emergency use of bamlanivimab in combination with etesivimab. In August, REGEN-COV (casirivimab in