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EFFICACY OF HIGH-CONCENTRATED OXYGEN INHALATIONS ADDING CAMOMILE OIL AT PATIENTS WITH VIRAL PNEUMONIAS

Shorikova D.V.,
PhD, MD, Associate Professor[1]
Shorikov E.I.
PhD, MD, Doctor of Medical Sciences, Professor[1]
(1) *Department of Internal Medicine, Clinical Pharmacology and Occupational Diseases, Higher State Educational Institution of Ukraine «Bukovinian State Medical University», Fastivska str., 2, Chernivtsi, Ukraine, 58000.*

Abstract

The aim - to study the clinical manifestations, capillary blood saturation, frequency of respiratory failure in patients with complicated forms of viral pneumonia.

Materials and methods. The study included 45 patients with viral pneumonias (mean age was 46.5±9.2 years). Patients observed were randomized into 2 groups. In group 1 (n=20), the only basic therapy was prescribed. In group 2 in addition to the basic therapy the inhalations with high concentrated oxygen with Camomile Oil were used.

The results of the study. It is proved that the use of highly concentrated oxygen with camomile oil in the inhalation treatment regimen significantly reduces the duration of local respiratory symptoms ($p<0.001$) and symptoms of general intoxication ($p<0.001$), prolonged hospital stay decreases by an average of 5 days ($p<0.001$). The relief of symptoms of RF in group 2 was noted for 10 days of hospitalization with an increase in capillary blood saturation (SatO2,%) to 95.2±2.91. Absolute therapeutic efficacy (absolute efficacy) of the correction of RF during complex treatment with the addition of highly concentrated oxygen was 85.0% versus 40.0% in group 1. Relative efficacy (relative efficacy) was 0.47 [0,27-0,83], with Odds Ratio (OR) – 0.12 [0,03-0,54]; $p<0.05$.

Conclusions. High-concentrated oxygen inhalations adding camomile oil is effective in complex treatment at patients with viral pneumonias.

Keywords: viral pneumonias, complications, oxygen inhalation.

Introduction. Regardless of the etiology of viral pneumonias (parainfluenza, adenovirus, respiratory syncytial, rhinovirus, reovirus, coronavirus infection and more than 200 pathogens), they are characterized by a short incubation period, generally a short fever, intoxication and damage to various parts of the respiratory tract [1].

Clinical differentiation of respiratory infections is difficult due to similar symptoms and clinical conditions [2, 3]. In case of damage and malfunction of the epithelium due to dryness, contamination, excessively high or excessively low temperature of the inhaled air, a change in the mucous membrane due to the use of some intranasal agents, the penetration of viruses into tissues is greatly facilitated [4, 5, 6].

According to studies, more than half of patients admitted for treatment in a hospital with complications of acute respiratory viral infections have hypoxemia and an increase in the partial pressure of blood carbon dioxide (pCO2) above 45 mm Hg at the time of the initial examination. 20 % of patients with hospitalization due to exacerbation of the disease have respiratory acidosis [7, 8, 9]. Lesions of the lower respiratory tract (bronchitis or pneumonia) with acute respiratory viral infections can lead to the development of decompensated hypercapnia, which is most often the cause of the development of respiratory acidosis [10, 11, 12].

Nowdays, the question of the effectiveness of inhalation of highly concentrated oxygen, in particular, the use of pocket spray in these patients, is not sufficiently studied.

The aim - to study the effecticacy of highly concentrated oxygen inhalations with the addition of

camomile aroma oil in the form of portable sprays.

Materials and methods. The study included 45 patients with acute respiratory viral infections. The average age is 46.5±9.2 years. All patients signed an informed consent to participate in the study. All observed subjects underwent laboratory and instrumental studies, including clinical and biochemical blood tests, chest X-ray, electrocardiography (ECG), pulse oximetry (PO).

Observed were randomized into 2 groups. In group 1 (n = 20), only basic therapy was prescribed. In group 2 in addition to the basic therapy were used inhalations with high concentrated oxygen with Camomile oil (Tesla's Secret by Eco Medical Europe Ltd Oxygen Breathing Mixture Sea Minerals Camomile, group 2, n=25). Oxygen inhalations in group 2 were carried out every 1-1.5 hours for 3 deep inspirations or, as necessary, more often with pronounced subjective signs of respiratory failure (shortness of breath).

For statistical analysis results we used Statistica for Windows Version 10.0 (Stat Soft inc., USA). Parameters are presented in the form M±m, where M is the Mean, m is standard deviation. In the analysis of categorical group data, the criterion Pearson $\chi 2$ with Yates correction was used. The assessment of the probability of the therapeutic effect was performed taking into account the absolute (AE) and relative (RE) efficacy, as well as the odds ratio (OR), with the calculation of confidence intervals and the reliability criterion for RR and OR. At the case of $p<0.05$, differences were statistically significant.

Results. At the time of admission to the hospital, the course of the disease was complicated by the appearance of cough with mucous sputum (45 people, 100%), shortness of breath (45 people, 100%). Objectively, according to the auscultatory and radiological picture, all patients observed signs of interstitial pneumonia (45 people, 100%).

Capillary blood saturation (SatO2,%) according to pulse oximetry was 87.4±3.2% in group 1 and 86.9±4.5% in group 2.

In the general cohort of patients, the phenomena of RF, assessed by the level of blood oxygen saturation (SpO2<95%), were detected in 80% (n=36) of the subjects. In this case, RF I degree (SpO 2 at the level of 90–94%) was determined in 42.2% (n=19) of patients, RF II degree (SpO2 at the level of 75–89%) - in 31.1% (n=14) patients.

On the background of the treatment, all patients showed positive dynamics and a reduction in symptoms of general intoxication. The use in the treatment of inhalations of highly concentrated oxygen with the addition of camomile oil, significantly reduced the duration of local respiratory symptoms: pharyngeal hyperemia by 1.7 days (37.8%), hoarseness - by 1.1 days (52.4%), rhinitis - by 1.6 days (27.6%), cough - by 7.6 days (45.3%), heavy breathing - by 4.1 days (48.8%), p<0.001, table 1.

Table 1

Duration of respiratory symptoms in the studied groups

Symptoms	*Group 1 n=20*	*Group 2 n=25*	*p*
Hyperemia of the pharynx	6.2±1.9	4.5±1.2	<0.001
Hoarseness of voice	3.2±0.91	2.1±0.71	<0.001
Rhinitis	5.8±1.10	4.2±0.70	<0.001
Cough	16.8±3.41	9.2±2.12	<0.001
Heavy breathing	12.5±3.47	8.4±2.94	<0.001

Note:
p – it is the reliability of the difference between groups.

In addition, a decrease in the duration of symptoms of general intoxication and fever was noted when inhalations of highly concentrated oxygen with camomile oil were added to the treatment regimen: fever - by 1.81 days (32.3%), headache - by 0.7 days (20.1%), adynamia - by 3.49 days (47.7%), myalgia - by 2.96 days (51.2%), decreased appetite - by 2.89 days (30.4%), p<0.001, table 2.

Table 2

The duration of intoxication symptoms in the studied groups

Symptoms	*Group 1 n=20*	*Group 2 n=25*	*p*
Fever	7.42±1.95	5.61±2.11	<0,001
Headache	4.18±0.94	3.48±0.62	<0,001
Adynamia	10.8±1.23	7.31±2.18	<0,001
Myalgia	8.74±1.98	5.78±0.56	<0,001
Decreased appetite	12.4±3.12	9.51±2.34	<0,001

Note:
p – it is the reliability of the difference between groups.

The average bed-stay of patients in group 1 was 14.5±4.7 days, whereas when complex inhalations were included in the complex treatment with the addition of camomile aromatic oil in group 2, this indicator was recorded within 9.5±2.49 days (p <0.001).

The dynamics of changes in the levels of capillary blood saturation (SatO2,%) according to pulse oximetry in the observation groups after 10 days of treatment is shown in Figure 2. The increase in saturation reached 91.4±3.19% in group 1 and approached 95.2±2.91% in group 2.

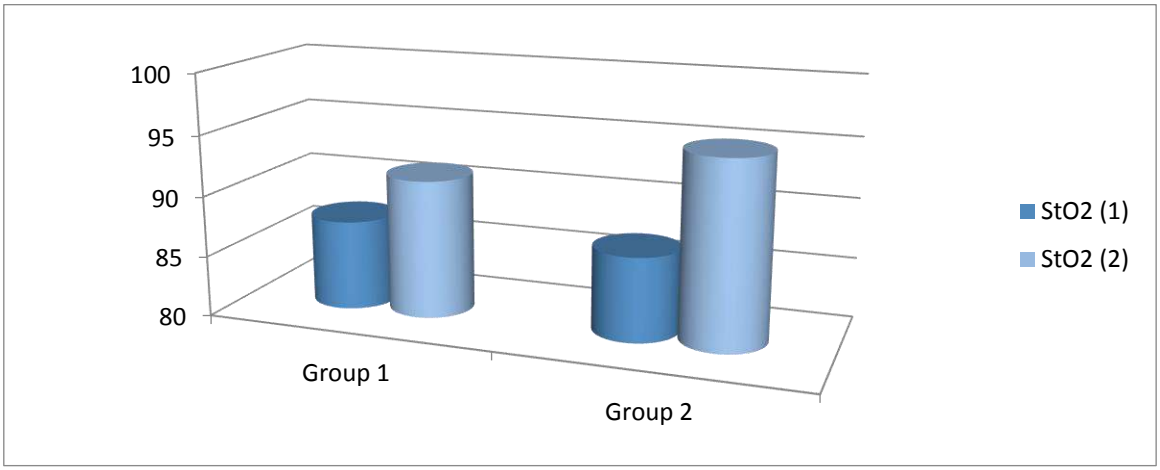

Fig. 2. *The changes of capillary blood saturation indices in groups of patients with complications of ARVI.*

The probability of releife of signs of respiratory failure 7 days after the start of therapy is presented in table 3.

Table 3

The effectiveness of the relief of RF when used to the complex treatment of inhalation of highly concentrated oxygen with the addition of camomile aroma oil

Parameters	AE, %	RE[CI%95]	OR[CI%95]
Group 1	40.0	0.47 [0,27-0,83] p<0.05	0.12 [0,03-0,54] p<0.05
Group 2	85.0		

It should be emphasized that the absolute therapeutic effectiveness (absolute efficacy) of the correction of RF during complex treatment with the addition of highly concentrated oxygen inhalations was 85.0% versus 40.0% in group 1. Relative efficacy (relative efficacy) was 0.47 [0,27-0,83], with Odds Ratio (OR) – 0.12 [0,03-0,54]; p<0.05.

So, in our own study it was found that 80% of patients hospitalized with viral pneumonias have acute respiratory failure, and therefore need oxygen support. An alternative method of combined treatment with the inclusion of oxygen support can be the use of pocket cans of highly concentrated oxygen.

Despite a some arsenal of highly effective and safe antiviral drugs and antibacterial agents, clinical practice indicates that everywhere there are complications of acute respiratory viral infections and worsening outcomes of community-acquired pneumonia. In 10% of cases in hospitalized patients, the disease acquires a life-threatening course. The use of non-drug treatment often can significantly increase the effectiveness of drug therapy. The physiological effects of pure oxygen, such as bronchodilatation, improved ventilation and perfusion of the lungs suggest that it may be an effective means of non-drug treatment of patients with complicated course of acute viral respiratory infections.

Conclusions. 1. Phenomenon of RF by the level of capillary blood saturation was detected in 80% of the examined: RF I-st degree was determined in 42.9% of patients, II degree I - in 31.4% of patients. A negative regression relationship was found between saturation of capillary blood, RR (r=-0.31; p<0.05) and HR (r=-0.31; p<0.05).

2. The use of highly concentrated oxygen with camomile oil in the inhalation treatment regimen significantly reduced the duration of local respiratory symptoms (p<0.001) and symptoms of general intoxication (p<0.001).

3. With the inclusion of highly concentrated oxygen in the addition with of camomile aromatic oil in the complex treatment, the average long-term duration in the hospital decreased by an average of 5 days (p<0.001). Over 10 days of hospitalization, an increase in capillary blood saturation (SatO2,%) up to 95.2±2.91% in patients with I and II degrees of respiratory failure was noted in the same group.

4. The absolute therapeutic efficacy of the correction of respiratory failure during complex treatment with the addition of highly concentrated oxygen inhalations was 85.0% versus 40.0% in group 1. Relative efficacy (relative efficacy) was 0.47 [0,27-0,83], with Odds Ratio (OR) – 0.12 [0,03-0,54]; p<0.05.

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