

PULMONARY HYPERTENSION AND COR PULMONALE IN INFANTS WITH BRONCHOPULMONARY DYSPLASIA: PREDISPOSING FACTORS, THERAPY AND IMMUNOPROPHYLAXIS OF RSV INFECTION.

Degtyareva E.A., Ovsyannikov D.J., Zaytseva N.O.

Moscow Children's Infectious Diseases Hospital №6, Peoples' Friendship University of Russia.

OBJECTIVE:

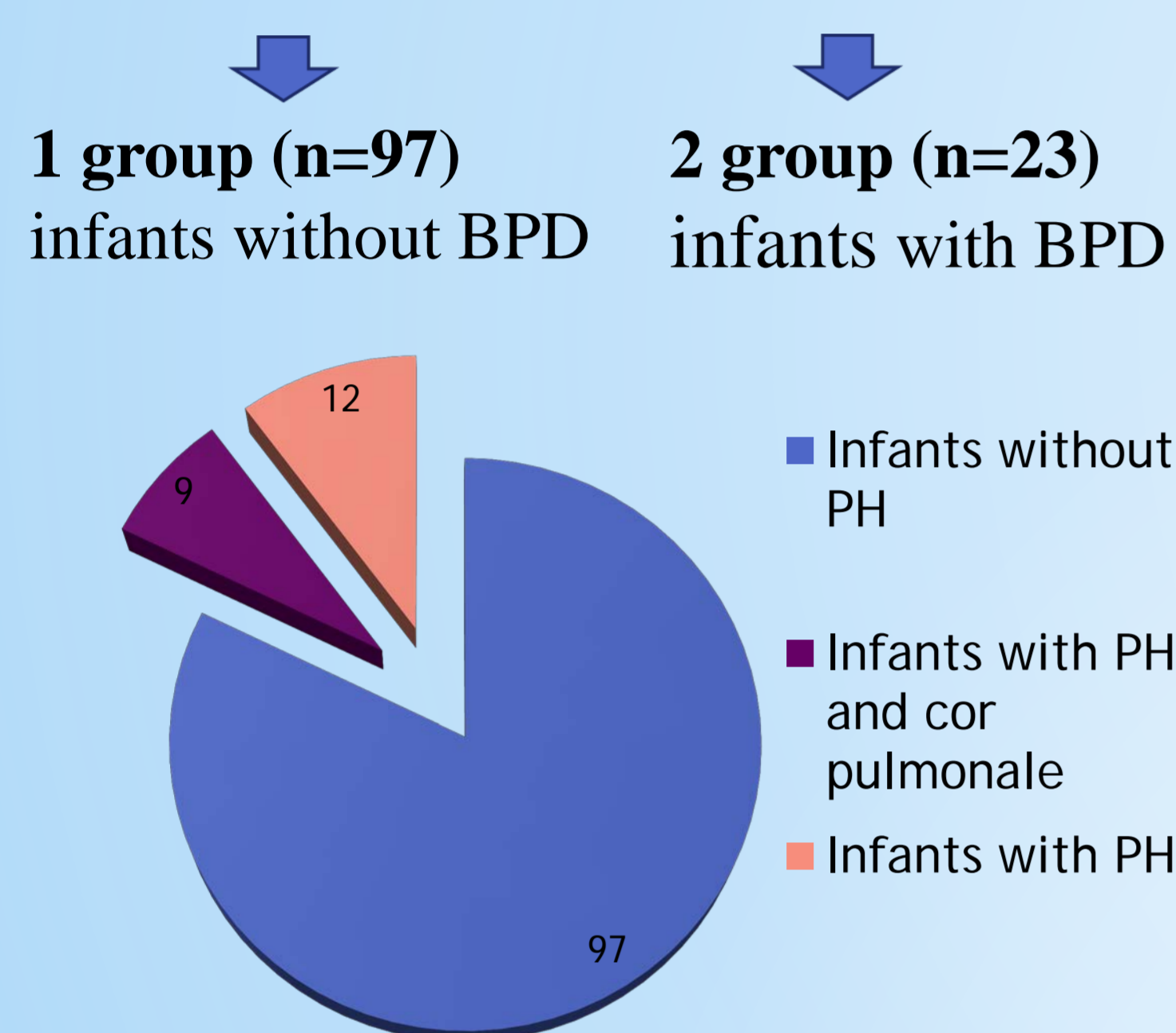
to optimize the tactics of management of children with bronchopulmonary dysplasia (BPD) complicated by pulmonary hypertension (PH), by means of contemporary diagnostics and therapy.

RESEARCH METHODS

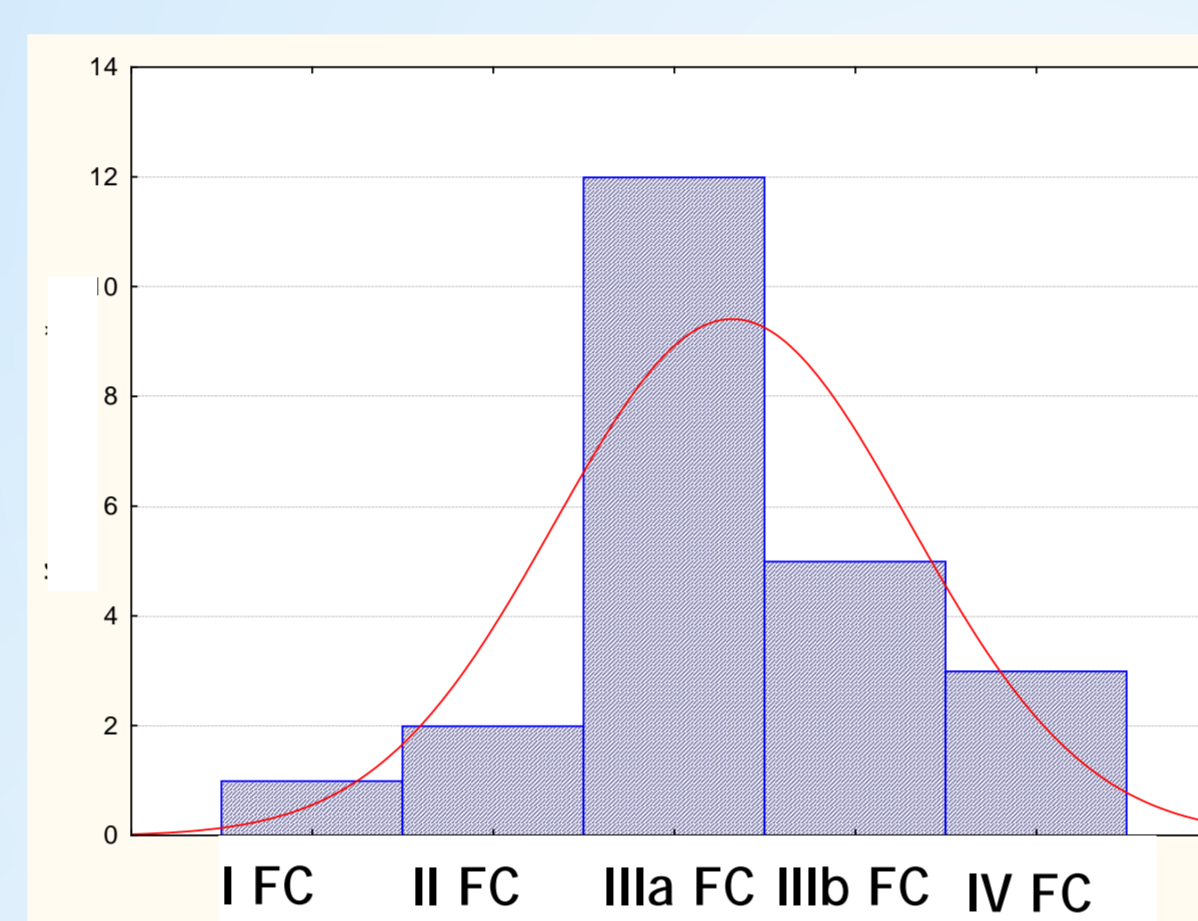
We have examined 120 children with BPD aged from 1 month to 3 years. The severity of BPD was determined based on the degree of oxygen dependence at 36 weeks postconception age or 56 days of life, or at discharge. Pulmonary hypertension was diagnosed at the value of systolic pulmonary artery pressure (SPAP) ≥ 36 mmHg by Doppler echocardiography, cor pulmonale was considered as cavity dilatation or hypertrophy of the right ventricle free wall on EchoCG. Functional class (FC) was determined on the basis of age-specific signs according to Panama classification of pulmonary hypertensive vascular disease in children (2011). The degree of hypoxemia was determined by transcutaneous pulse oximetry with O_2 saturation $< 95\%$. The obtained data were processed using methods of parametric and nonparametric statistics

RESULTS

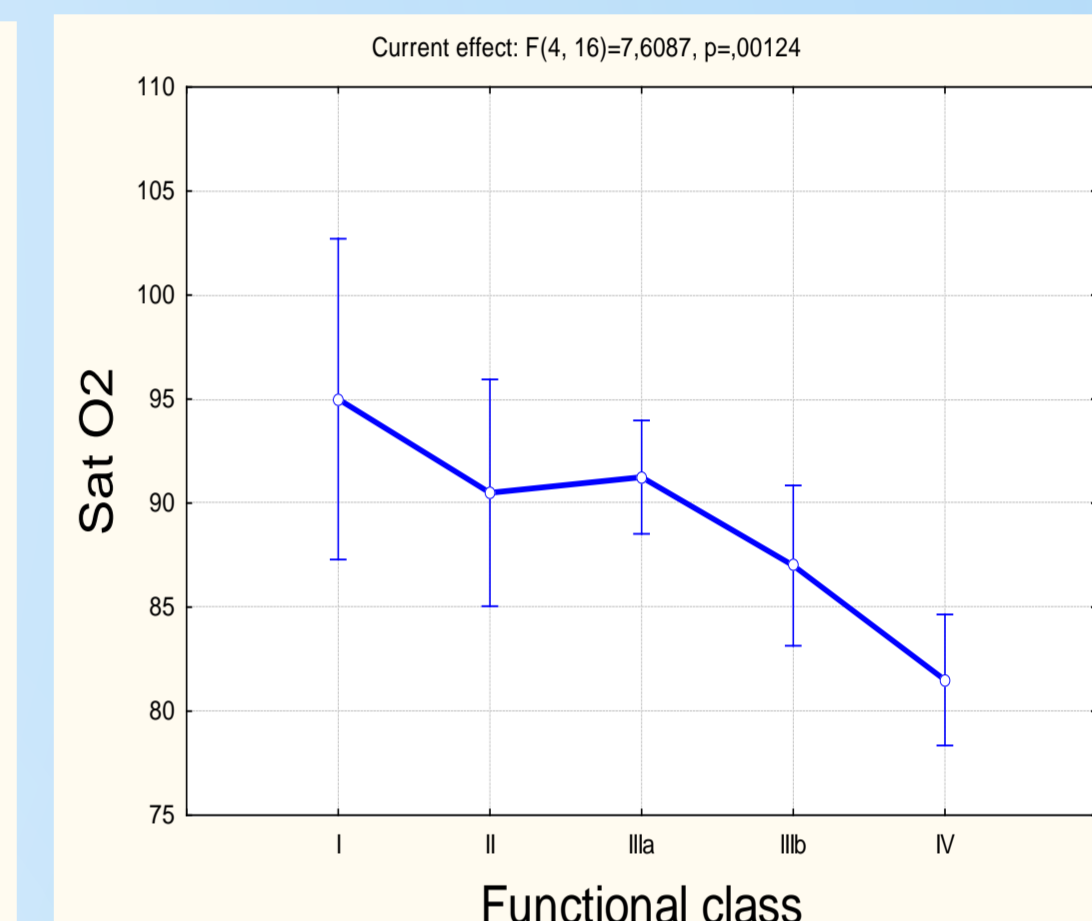
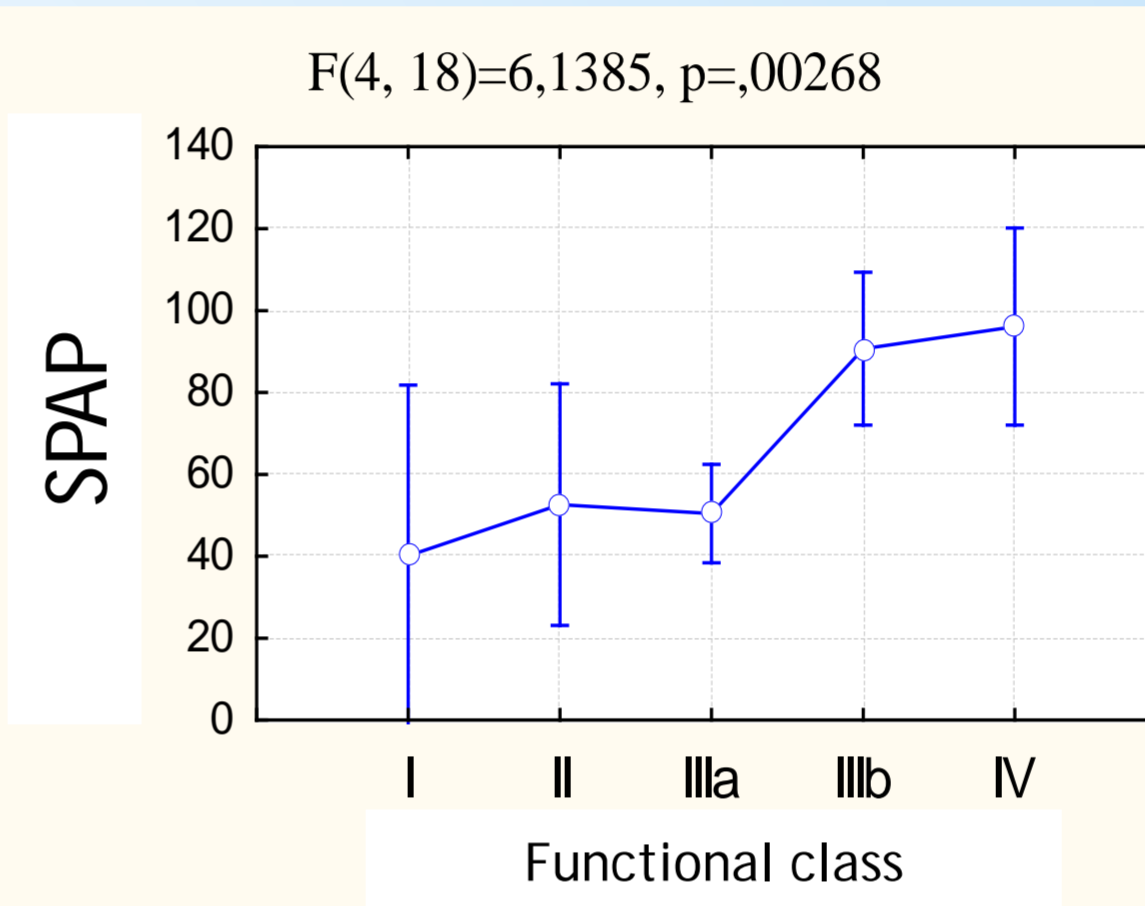
120 children with BPD



Functional class of PH distribution



A quantitative relationship was determined between FC PH and the degree of SPAP increase ($p = 0,00268$) and degree of Sat O_2 decrease

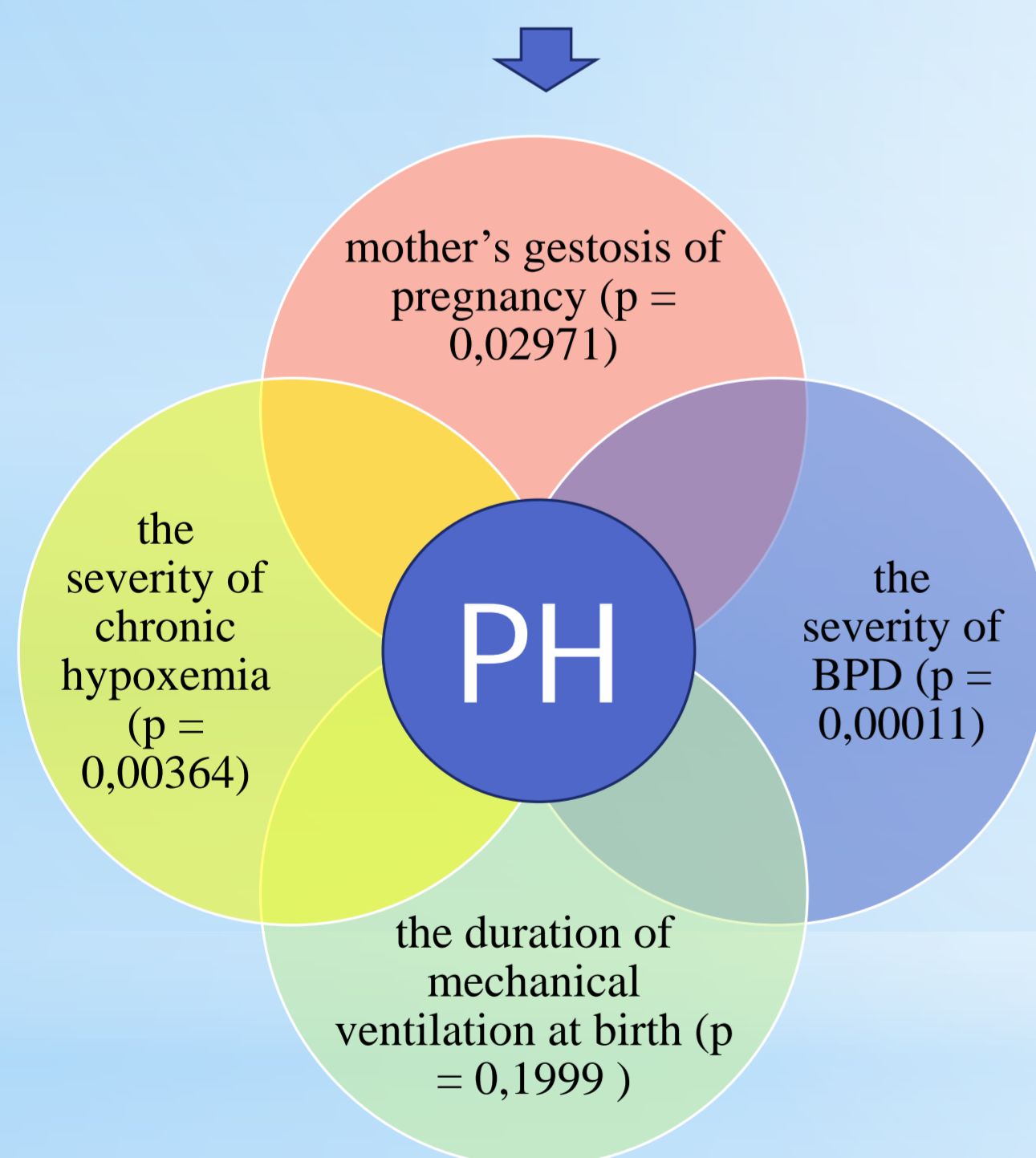


TREATMENT of PH

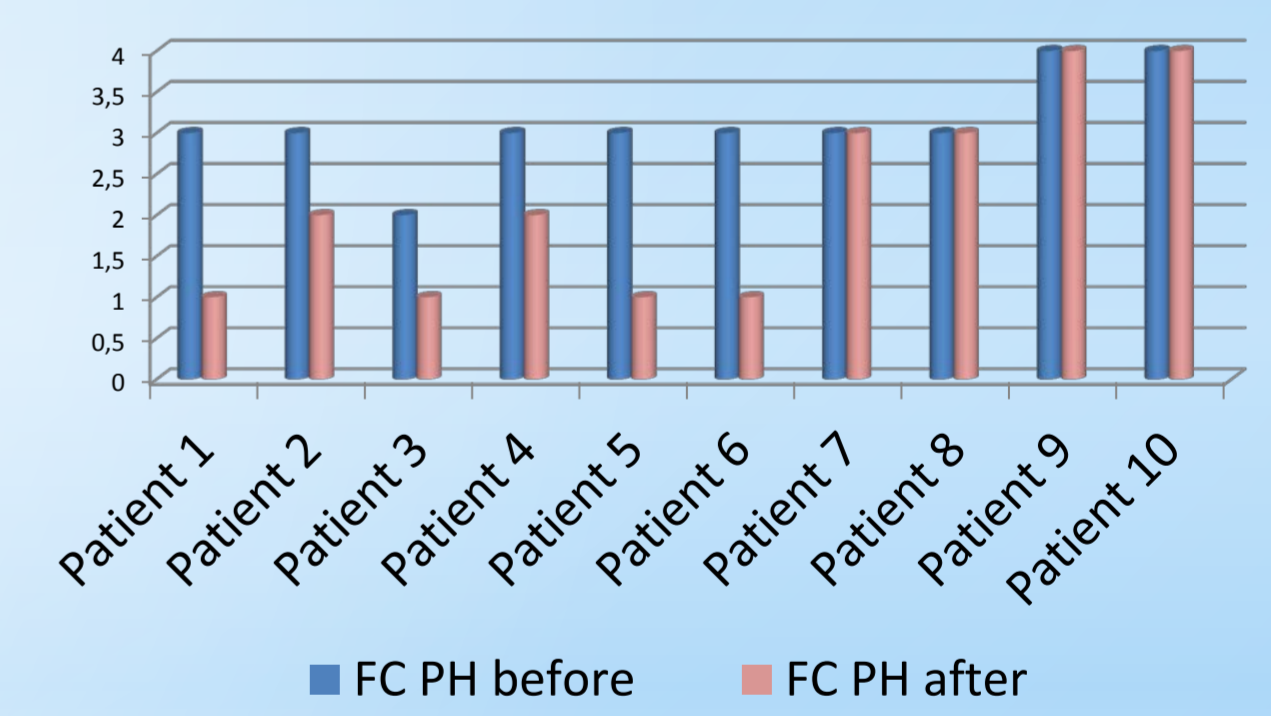
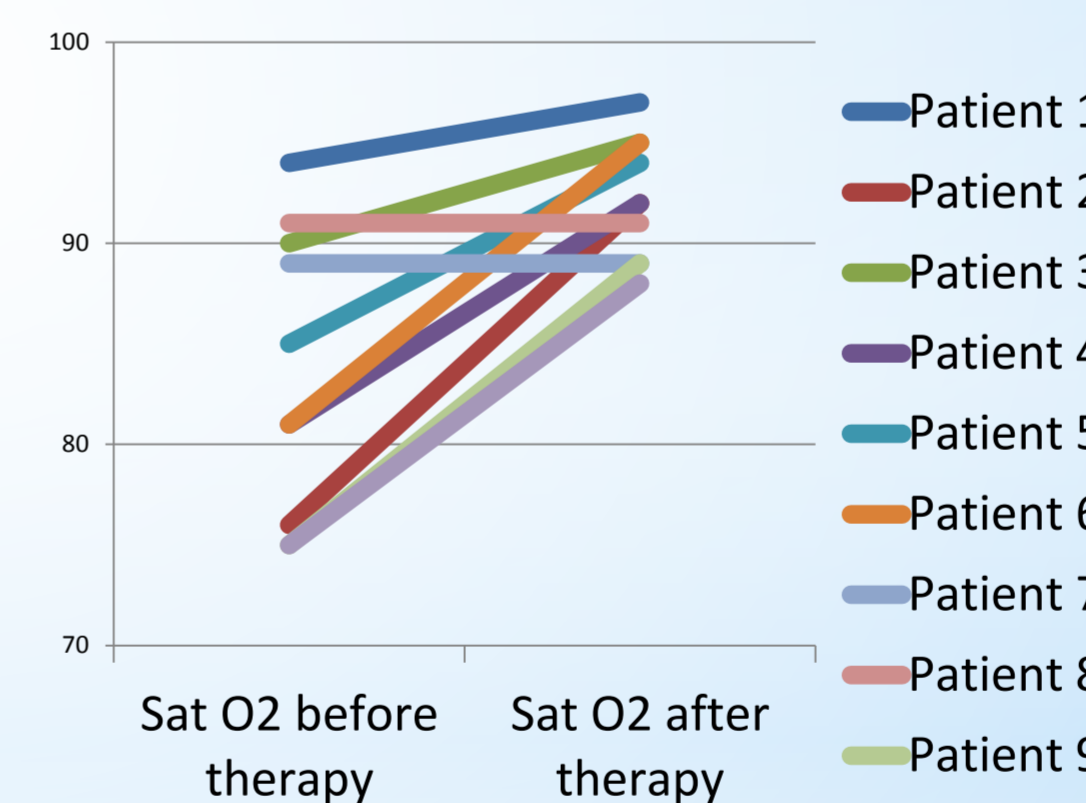
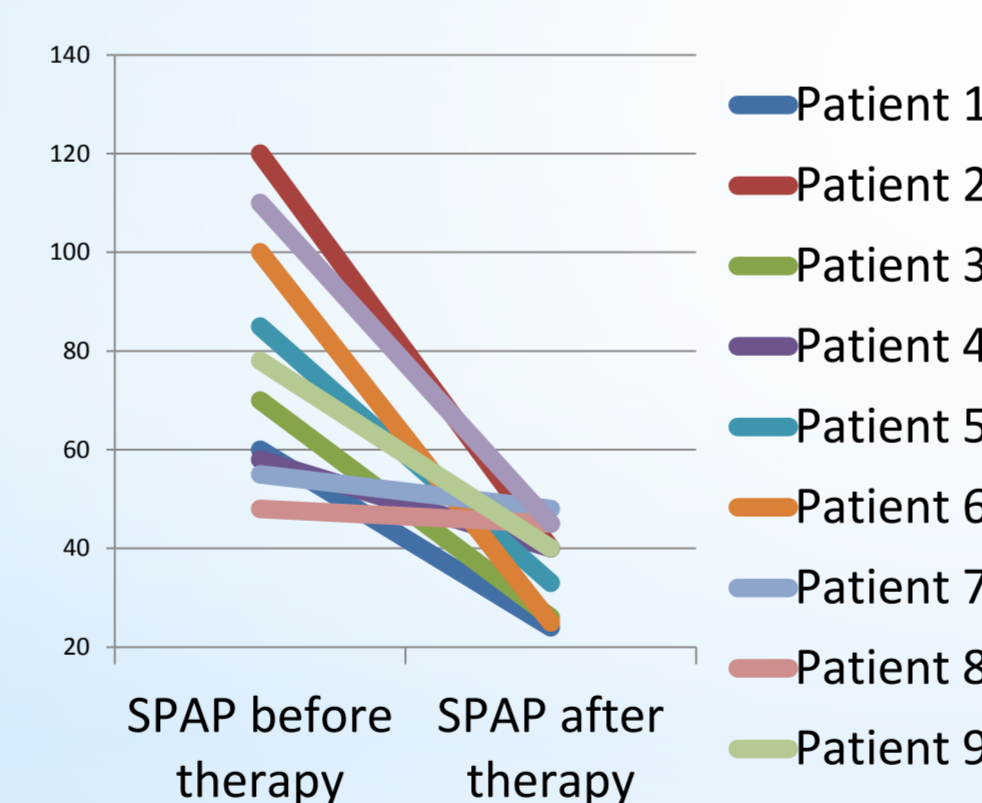
Prevention and therapy of PH in BPD was aimed at correcting hypoxemia by prolonged oxygen therapy in all children with BPD at $SatO_2 < 91\%$, and in the case of pulmonary hypertension with $Sat O_2 < 94\%$. 10 children were further prescribed Sildenafil at a dose of 0.5-2 mg/kg 3-4 times a day.

After the treatment, we observed a significant decrease in the absolute values of SBP (84 ± 36 vs. 36 ± 12 mmHg, $p = 0,005$), in the coefficient of SPAP/SBP by 20% from the baseline ($1 \pm 0,4$ vs. $0,94 \pm 0,17$, $p < 0,005$). The increase of $Sat O_2$ values from $82 \pm 12\%$ to $93 \pm 4\%$ ($p \leq 0,01$) was observed on the background of treatment

Predisposing factors of PH development



The development of cor pulmonale in examined children was related to severe PH ($p = 0,00364$) and severe chronic hypoxemia ($p = 0,01986$)



Mortality in children with BPD

depended on the development of PH without PH - 1.3 % (1 patient) with PH - 17.3%.

Mortality in children with BPD complicated by PH

was associated with cor pulmonale formation ($p = 0,01779$) and severe chronic hypoxemia ($p = 0,00975$)

Prevention of RSV-infection

To prevent RSV infection during the epidemic season, 76 patients with BPD, including 23 infants with PH, were passively immunized by Sinagis (1 injection per month). During immunization period in this group of children there were no cases of acute respiratory infections caused by RSV and requiring hospitalization.

CONCLUSIONS

It is necessary to monitor hypoxemia and SPAP level in patients with severe BPD for timely onset of treatment aimed at prevention of PH occurrence and adverse outcome. Immunoprophylaxis of RSV infection by Sinagis monoclonal antibody agent is effective in the group of the most severely ill preterm infants with PH at the background of BPD.