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HEALTH STATUS OF NEWBORNS: FEATURES OF BRONCHO-OBSTRUCTIVE SYNDROME IN INFANTS BORN VIA IVF METHOD

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Abstract: This article highlights the clinical course of broncho-obstructive syndrome in newborns, particularly in those born via in vitro fertilization (IVF). Infants born through IVF often show underdeveloped respiratory systems, bronchial hyperreactivity, and a predisposition to pulmonary insufficiency syndromes. The article discusses the pathogenesis, clinical signs, and modern treatment approaches for broncho-obstructive syndrome.

Keywords: infant health, in vitro fertilization, broncho-obstructive syndrome, respiratory failure, neonatology, perinatal risk

Introducion

The health of newborns is one of the most pressing topics in the field of neonatology today. Particularly, newborns born via in vitro fertilization (IVF) are found to be at a higher risk for various respiratory disorders during the perinatal and postnatal periods, including broncho-obstructive syndromes. Babies born through IVF often develop under complicated or prolonged pregnancies. In such cases, maternal hormonal, immunological, or pharmacological factors may contribute to difficulties in the development of the infant's primary airways.

Broncho-obstructive syndrome manifests in the neonatal period with signs such as shortness of breath, wheezing, expiratory dyspnea, and chest retraction. This condition results from swelling of the bronchial walls, mucus accumulation, and muscle spasms. In IVF-born infants, these processes are often related to morphologic and functional immaturity of the lung tissue. These children tend to exhibit bronchial hyperreactivity, showing heightened responses even to minor infections or allergens.

In modern neonatology, early diagnosis and personalized treatment approaches for this syndrome are of significant importance. Contemporary diagnostic methods such as respiratory rate monitoring, pulse oximetry, chest radiography, and laboratory evaluations are used to assess the severity of broncho-obstructive conditions in neonates.

Treatment options include pulmonary ventilation, bronchodilators, glucocorticosteroids, and oxygen therapy. In IVF-born infants, this therapy must be administered cautiously and gradually, given their lower lung elasticity and more sensitive respiratory centers.

Additionally, it is recommended that infants born via IVF undergo long-term monitoring to evaluate bronchial and immune system development during growth. Clinical practice shows that such children are more susceptible to chronic bronchitis, asthma, or other respiratory diseases in early childhood. Therefore, early and comprehensive interventions against broncho-obstructive syndrome are essential, including rehabilitation and structured preventive care.

Newborns born via IVF are often at risk for various perinatal and neonatal complications. These complications are directly associated with high-risk pregnancies, premature birth, multiple gestations, or maternal chronic conditions. In this group of infants, the

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respiratory system may be underdeveloped, with immature alveoli and incomplete formation of the bronchial tree.

The pathophysiology of broncho-obstructive syndrome involves bronchial narrowing, mucosal hyperplasia, excessive mucus production, and smooth muscle spasms in the airways. This restricts air entry into the alveoli, leading to hypoxia and carbon dioxide retention. Viral infections, especially RSV (respiratory syncytial virus), often serve as primary triggers for this syndrome. However, in IVF-born infants, immune responses to such infections tend to be weaker.

Diagnosis involves identifying rapid breathing, chest retraction, whistling wheeze during exhalation, and in severe cases, cyanosis and respiratory failure. On auscultation, moist rales and reduced breath sounds may be heard. Diagnostic confirmation includes chest X-ray, pulse oximetry, arterial blood gas analysis, and differential diagnostics.

Treatment strategies depend on the severity of the syndrome. In mild cases, symptomatic management is sufficient: warm steam inhalations, nasal passage clearance, and positioning to ease breathing. In moderate to severe cases, bronchodilators (such as salbutamol, ipratropium bromide), inhaled glucocorticosteroids, supplemental oxygen, or even mechanical ventilation may be necessary. In cases of weakened immunity, immunomodulatory therapy (e.g., interferons, vitamin support) is also recommended.

In conclusion, infants born through IVF possess specific physiological characteristics that require specialized assessment and management strategies. Recent scientific literature confirms that pregnancies resulting in IVF births are often classified as high-risk. These infants are commonly premature and have immature respiratory systems, increasing their likelihood of developing broncho-obstructive syndromes. Additionally, postnatal interventions such as resuscitation, mechanical ventilation, and antibiotic therapy may disrupt respiratory microbiota.

Broncho-obstructive syndrome tends to follow a more chronic course in IVF-born infants. Clinical observations show frequent cases of delayed respiratory insufficiency, recurrent respiratory infections, and prolonged wheezing episodes in such infants. Treatment should be comprehensive, addressing the underlying causes and incorporating symptom relief and immune support. Antiviral and antifungal agents, bronchodilators, respiratory physiotherapy, and breathing exercises are widely used.

Modern neonatology places special emphasis on using nebulized inhalation therapy, positional treatment, percussion massage, and airway drainage for managing broncho-obstructive syndrome. Each clinical case in IVF-born infants must be approached individually. Continuous monitoring by pediatricians, pulmonologists, and immunologists during the infant's first year of life is strongly advised.

Preventive measures are especially vital for infants born via IVF. Maintaining maternal health during pregnancy, perinatal supervision, controlled labor conditions, coordinated neonatal care after birth, and regular follow-up in the first year play key roles in preserving infant health and preventing broncho-obstructive syndrome. Early detection, accurate evaluation, and modern treatment are crucial to ensuring long-term health outcomes. For neonatologists and pediatricians, continuous monitoring and individualized care for such infants is essential.

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