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AGE-RELATED REMODELING OF THE THYMUS IN INFANTS WITH NECROTIZING ENTEROCOLITIS

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Background

Necrotizing enterocolitis (NEC) is a severe inflammatory and necrotizing intestinal disease of infancy, especially common in premature and low-birth-weight newborns. Although intestinal injury is the principal manifestation, the disease may also involve central and peripheral immune organs. The thymus is particularly important because it plays a key role in the maturation and differentiation of T lymphocytes. In the dissertation, thymic changes were studied separately in the early neonatal period, late neonatal period, and later infancy.

Objective

To characterize age-related pathomorphological changes in the thymus in infants with NEC and to evaluate their relationship with disease severity.

Materials and Methods

Autopsy materials from infants under one year of age who died with NEC were analyzed. The main group was divided according to postnatal age into 0–7 days, 8–28 days, up to 3 months, up to 6 months, and up to 12 months. NEC severity was assessed using the Bell classification. Morphological, histochemical, morphometric, immunohistochemical, and statistical methods were applied.

Results

Thymic alterations in NEC demonstrated age-dependent structural remodeling. The severity of morphological changes varied across postnatal periods and was associated with the degree of systemic inflammatory and immune disturbance. The findings support the concept that thymic involvement reflects not only secondary stress-related injury but also systemic immune disintegration accompanying severe NEC. The dissertation further reports that NEC should be considered a systemic immunopathological process involving both central and peripheral immune organs.

Conclusion

NEC is accompanied by pronounced age-related thymic remodeling. Assessment of thymic structural changes may provide additional information about the severity of systemic immune dysfunction and may improve the morphological interpretation of fatal NEC cases.

**References:**

1. Niño D.F., Sodhi C.P., Hackam D.J. Necrotizing enterocolitis: new insights into pathogenesis and mechanisms // Nature Reviews Gastroenterology & Hepatology. 2016;13(10):590–600.
2. Hackam D.J., Sodhi C.P. Bench to bedside — new insights into the pathogenesis of necrotizing enterocolitis // Nature Reviews Gastroenterology & Hepatology. 2022;19(7):468–479.
3. Sampah M.E.S., Hackam D.J. Prenatal Immunity and Influences on Necrotizing Enterocolitis and Associated Neonatal Disorders // Frontiers in Immunology. 2021;12:650709.
4. Blum L., Vincent D., Boettcher M., Knopf J. Immunological aspects of necrotizing enterocolitis models: a review // Frontiers in Immunology. 2024;15:1434281.
5. Ishiyama A., Jang H.S., Dintaman J.M., et al. Necrotizing Enterocolitis: A Comprehensive Review on Toll-like Receptor 4-Mediated Pathophysiology, Clinical, and Therapeutic Insights // Biomedicines. 2025;13(9):2288.