MORPHOLOGICAL PATTERNS AND PATHOGENETIC MECHANISMS OF COMPLICATIONS AFTER LIPOFILLING

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Introduction. Despite the widespread use of lipofilling in reconstructive and aesthetic surgery, the variability of its outcomes remains a significant clinical problem. Morphological and immunohistochemical evaluation of postoperative complications allows for a deeper understanding of the underlying pathogenetic mechanisms and their relationship with clinical manifestations .

Aim. To identify the main morphological patterns of lipofilling complications and determine their pathogenetic and clinical significance.

Materials and Methods. A morphological and immunohistochemical analysis was performed on adipose tissue samples obtained from patients with clinically confirmed complications after lipofilling. Histological structure, inflammatory activity, and expression of key markers (CD68, IL-6, TNF-α, TGF-β1) were evaluated depending on the type of complication and anatomical localization.

Results. Five major morphological types of tissue reactions were identified: lipogranuloma, cyst with fibrous capsule, fibroma, lipoma, and unencapsulated fat necrosis. Lipogranuloma was the most frequent form and

was characterized by active inflammatory response with macrophage infiltration and cytokine expression. Cystic formations demonstrated a predominance of degenerative changes with minimal inflammation and delayed clinical manifestation. Fibromas reflected chronic fibrotic remodeling with low inflammatory activity, while lipomas showed minimal immunological involvement. Unencapsulated fat necrosis represented the most acute form of complication, associated with intense inflammatory response, high expression of CD68 and IL-6, and absence of organized tissue remodeling. The severity and type of morphological changes varied depending on anatomical location, with the most aggressive patterns observed in the mammary gland region.

Conclusion. Complications after lipofilling are characterized by distinct morphological patterns reflecting different pathogenetic mechanisms, including inflammation, degeneration, and fibrosis. Identification of these patterns, together with immunohistochemical markers, provides a basis for improving diagnostic accuracy and developing personalized strategies for prevention and treatment of adverse outcomes.

LITERATURE

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