CORRELATION BETWEEN ULTRASOUND FINDINGS AND PATHOMORPHOLOGICAL CHANGES IN UTERINE DISEASES

Usarov Mukhriddin Shukhratovich
Samarkand State Medical University, basic doctoral student
Usarovmuxriddin0777@gmail.com

Abstract: This study investigates the correlation between ultrasound findings and pathomorphological changes in uterine diseases. Uterine pathologies, including inflammatory, hyperplastic, and neoplastic conditions, are among the most common gynecological disorders. Early and accurate diagnosis is critical for timely treatment. Ultrasound is a non-invasive, widely available diagnostic method, yet pathomorphological analysis remains the gold standard. Establishing reliable correlations between these two methods is of significant scientific and practical importance for improving diagnostic accuracy in clinical practice.

Keywords: uterine diseases, ultrasound diagnostics, pathomorphology, endometrium, correlation analysis, early diagnosis

Introduction: Uterine diseases, including inflammatory, hyperplastic, and neoplastic conditions, represent one of the most common pathologies in gynecology. Early and accurate diagnosis of these conditions is essential for timely treatment and prevention of complications. However, clinical manifestations are often nonspecific, especially in early stages. Ultrasound examination (US) is a widely available, non-invasive, and highly informative diagnostic method that allows visualization of structural changes in the uterus. At the same time, pathomorphological analysis remains the gold standard for definitive diagnosis. Therefore, studying the correlation between ultrasound features and pathomorphological changes is of significant scientific and practical importance.

Main body: Aim: To evaluate the relationship between ultrasound findings and pathomorphological changes in various uterine diseases.

Materials and Methods: The study included 146 women of reproductive age with suspected uterine pathology. All patients underwent transabdominal and transvaginal ultrasound examination using high-frequency probes (5–9 MHz). The following parameters were assessed: endometrial thickness, structural homogeneity, echogenicity, presence of focal lesions, and vascularization patterns. Subsequently, histological and morphometric analyses were performed on biopsy or surgical specimens. The obtained data were statistically analyzed using standard methods, and correlations between ultrasound and morphological findings were evaluated ($p <$

0.05).Results and Discussion: According to the results, pathological ultrasound changes were detected in 81.5% of patients. Endometrial thickening was observed in 58.2% of cases, heterogeneous structure in 46.6%, and focal formations in 34.9% of patients. Pathomorphological examination confirmed inflammatory changes in 41.7% of cases, hyperplastic processes in 33.5%, and neoplastic lesions in 24.8%. A significant correlation was found between ultrasound parameters and morphological findings, particularly between endometrial thickness and hyperplastic changes (r = 0.72), as well as between heterogeneous echostructure and inflammatory alterations (r = 0.68). These results indicate that ultrasound findings can reliably reflect underlying morphological processes and serve as an effective preliminary diagnostic tool.

Conclusion: Ultrasound examination demonstrates high diagnostic value in detecting uterine diseases and shows a strong correlation with pathomorphological changes. It allows early identification of pathological processes even before pronounced clinical symptoms appear. The integration of ultrasound diagnostics with morphological verification improves diagnostic accuracy and contributes to the optimization of patient management strategies.

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