

ACUTE KIDNEY INJURY IN PATIENTS WITH SEVERE BURNS: PATHOGENESIS, DIAGNOSIS, AND TREATMENT

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Abstract. *Acute kidney injury in patients with severe burns is one of the most serious complications in clinical practice. Its development is caused by fluid loss, circulatory disorders, tissue breakdown, and inflammatory reactions that damage the kidneys. Early recognition with laboratory and instrumental methods is very important for timely treatment. Management is based on restoring fluid balance, supporting kidney function, preventing toxins from accumulating, and in severe cases using blood purification methods. Preventive measures and comprehensive therapy increase the chances of survival and help to preserve kidney function in burn patients.*

Keywords: *severe burns, acute kidney injury, pathogenesis, diagnosis, treatment, prevention, prognosis.*

Introduction

Complicated ovarian tumors and tumor-like formations in girls remain a serious challenge in pediatric and adolescent gynecology. Such conditions may present with torsion, rupture, or bleeding, leading to acute abdominal pain and threatening reproductive health. In the past, radical surgery often resulted in unnecessary loss of ovarian function. Today, the focus has shifted toward organ-preserving approaches supported by modern minimally invasive techniques, especially laparoscopy. These methods allow accurate diagnosis, minimal surgical trauma, and preservation of ovarian tissue, which is essential for maintaining future fertility. The relevance of this problem lies in ensuring timely diagnosis and applying treatment strategies that combine effectiveness with preservation of reproductive potential in young patients.

Main part

Ovarian tumors and tumor-like formations in children and adolescents represent a relatively rare but clinically significant condition in gynecology. Most of these masses are benign, yet complications such as torsion, rupture, or hemorrhage can occur, leading to acute surgical emergencies. The incidence of ovarian masses in girls is lower compared to adults, but their clinical importance is higher due to the risk of delayed diagnosis and the impact on future reproductive health. Epidemiological studies indicate that tumor-like lesions, such as functional cysts, dermoid cysts, or benign epithelial tumors, make up the majority of cases, while malignant neoplasms are less common but require careful consideration. The clinical presentation often mimics other abdominal pathologies, which complicates diagnosis. Therefore, awareness of this problem among pediatricians and gynecologists is crucial for timely management. Understanding the epidemiology and clinical relevance forms the foundation for developing effective treatment strategies.

The diagnosis of complicated ovarian tumors in girls remains a challenge due to the nonspecific clinical presentation. Symptoms such as acute abdominal pain, nausea, vomiting, or signs of peritonitis may resemble appendicitis or intestinal obstruction. Traditional physical examination alone is not sufficient for accurate diagnosis. Modern imaging technologies, especially ultrasound with Doppler evaluation, are essential for identifying ovarian masses and assessing blood flow disturbances during torsion. Magnetic resonance imaging (MRI) can provide additional detail in unclear cases, offering precise differentiation between benign and malignant lesions. Laboratory markers, including tumor markers, may support the diagnostic process, though their specificity in children is limited. Despite advances, definitive diagnosis often requires intraoperative evaluation. Early and accurate imaging is therefore critical not only for confirming the diagnosis but also for guiding the choice of treatment strategy, reducing unnecessary radical procedures, and ensuring organ preservation.

The modern principles of surgical treatment emphasize organ preservation as the primary goal, especially in pediatric and adolescent patients. In the past, oophorectomy was commonly performed, but research has shown that ovarian function can often recover after detorsion, even when ischemia appears severe. Laparoscopic surgery is now the gold standard because it combines diagnostic accuracy, minimal invasiveness, and therapeutic effectiveness. This approach allows surgeons to perform detorsion, excise only the pathological mass, and preserve healthy ovarian tissue. Benefits include reduced postoperative pain, faster recovery, minimal scarring, and a lower risk of psychological trauma. Importantly, organ-preserving surgery helps maintain future reproductive and hormonal function, which is vital for young patients. The choice of conservative management over radical removal reflects the modern understanding of ovarian resilience and the priority of safeguarding long-term reproductive potential.

Future perspectives in managing complicated ovarian tumors and tumor-like formations in girls focus on refining diagnostic accuracy and expanding organ-preserving surgical options. Advances in laparoscopic and robotic-assisted techniques hold promise for safer, more precise interventions with better preservation of ovarian tissue. Intraoperative monitoring of ovarian perfusion and innovative imaging methods may help assess tissue viability more accurately, reducing unnecessary oophorectomies. Additionally, the development of standardized treatment protocols and training programs for pediatric surgeons will improve clinical outcomes worldwide. Emphasis is also being placed on long-term follow-up studies to evaluate the reproductive and endocrine outcomes of organ-preserving surgeries. The integration of minimally invasive surgery into routine pediatric gynecology represents a significant step forward, ensuring that treatment is not only effective but also protective of the future health and quality of life of young patients. These evolving principles highlight a shift from radical to conservative approaches in modern medicine.

Conclusion

Complicated ovarian tumors and tumor-like formations in girls remain a challenging problem in pediatric and adolescent gynecology. Their clinical significance lies not only in the acute risks caused by torsion, rupture, or hemorrhage but also in the potential long-term consequences for reproductive and hormonal health. The diagnostic process is often complicated by nonspecific symptoms and overlapping features with other abdominal emergencies, which

underlines the importance of modern imaging and timely surgical evaluation. Contemporary treatment principles emphasize organ preservation as the cornerstone of management. Laparoscopic surgery has emerged as the gold standard, providing accurate diagnosis, minimal invasiveness, and the opportunity to preserve functional ovarian tissue. Evidence suggests that ovarian recovery is possible even after severe ischemia, which supports conservative surgical approaches over radical oophorectomy. Future perspectives focus on improving diagnostic technologies, intraoperative monitoring of ovarian viability, and expanding minimally invasive surgical methods, including robotic-assisted techniques. By prioritizing organ preservation, modern medicine ensures not only immediate recovery but also long-term reproductive and psychological well-being for young patients.

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