

Predicting of histopathologic type of acute appendicitis by ultrasound: a prospective study of 70 cases

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1. Purpose

To evaluate the value of ultrasound in preoperative predicting of histopathological diagnosis of acute appendicitis.

2. Material and methods

This prospective study was approved by the institutional review board. It includes 70 patients, 34 male and 36 female, mean age of 19 years (ranging from 14-64 years) that were diagnosed with appendicitis using ultrasound. Ultrasound technique with graded compression was used for examination of ileocecal region by single radiologist with more than 15 years of experience. Criteria for appendicitis were: direct visualization of appendix vermiformis with diameter more than 5 mm, incompressibility, clear visualization of the wall's layers, presence of periappendicular inflamed fat tissue and local presence of (small) free fluid. Patients were treated conservatively or surgically based on assessment made by the surgeon. Specimens removed during surgery were examined grossly and microscopically by anatomic pathologists. Catarrhal appendicitis was defined as presence of neutrophil infiltration of the mucosa, submucosa and muscularis propria. Formation of abscess within the wall along with ulcerations and foci of necrosis in the mucosa is defined as phlegmonous appendicitis. Gangrenous stage is characterized by presence of green-black gangrenous necrosis through the wall extending to the serosa with possibility of rupture.

3. Results

Catarrhal appendicitis was present in 10 (14.3%) cases, phlegmonous appendicitis was present in 18 (25.7%) cases, gangrenous without perforation histologically was diagnosed in 16 (22.9%) cases, whereas gangrenous perforated appendicitis was present in 11 (15.7%) cases. Appendicular abscess had 6 (8.6%) cases and abortive appendicitis 9 (12.9%) cases. In 90% of the cases matching was confirmed between histopathology and preoperative ultrasound diagnosis. In 87% of the cases the operative finding overlapped with the histopathological finding. The overlapping of ultrasonography and the histopathological diagnosis is the lowest of gangrenous appendicitis without perforation, whereas it is the highest in phlegmonous appendicitis.

4. Conclusion

Ultrasound is a valuable method for assessing right lower quadrant pain and it still remains the first line imaging technique. In the hands of experienced sonographer ultrasound is a valuable method for preoperative predicting of histopathological type of acute appendicitis. The possibility of coming close to the histopathological diagnosis using ultrasound is not decisive but it could be beneficial in the process of making treatment decision, open vs laparoscopic appendectomy or maybe even conservative antibiotic treatment. Still, making a histopathological diagnosis using ultrasound is reserved for the well trained and experienced sonographers.

5. References

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