

# Abstract

## **Analysis of prescribing antibiotics for laparoscopic appendectomies in a paediatric patient population**

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**Introduction and aims:** Appendicitis is one of the most common acute diagnoses in paediatric population. Incorrect diagnosis, poorly performed antibiotic prophylaxis (AP) or treatment can lead to life-threatening complications such as perforation, peritonitis, periappendiceal infiltrate or abscess. The aim of this study was to analyse the administration of antibiotics (ATB) as a part of prophylaxis before appendectomy and as part of the therapy of complicated appendicitis in the paediatric population and to compare the obtained results. Specifically, 2 periods were compared – before and after the introduction of the recommended hospital procedure (RHP; 22. 06. 2017). The partial goal of the study was to identify factors that influenced the occurrence of complications and length of hospitalization in the monitored population.

**Methods:** An unicentric retrospective study took place at the Clinic of paediatric surgery and traumatology at the University hospital Hradec Králové. Data were collected from 2014 to 2020. Patients under 18 years of age who underwent laparoscopic appendectomy were included in the study. Data such as: patients demographic, surgical procedure data (day and duration of surgery, histology results) were recorded from the medical documentation. Furthermore, data related to the administration of antibiotics were collected, namely: choice and dose of ATB, time and route of administration, intervals between individual doses and from AP and the length of prophylaxis and treatment itself. Serum laboratory values (leukocytes and CRP), body temperature, and abdominal culture and sensitivity results were also monitored. The collected data were compared with RHP and with the results of literature research (LR), which was carried out as a part of the thesis. The obtained data were evaluated using descriptive statistics. In order to compare the results between the periods before and after the introduction of RHP, the Mann-Whitney test was used. Spearman's correlation analysis was used to identify factors influencing the length of hospitalization and the occurrence of complications.

**Results:** One hundred and fifty-six paediatric patients (87 boys and 69 girls) with an average age of  $10.35 \pm 2.73$  years were included in the study. Antibiotic prophylaxis (AP) was administered before

surgery to 150 patients (96.15 %) and treatment has been initiated in 120 patients (76.92 %). Ampicillin/sulbactame was the most commonly used ATB both in prophylaxis (46.82 %) and in treatment (28.28 %). No AP was correctly performed before the implementation of RHP and only 4 patients (5.88 %) were treated according to both reference standards (RS). After the introduction of RHP, according to RS, 8 APs (9.09 %) were performed correctly. According to RHP, 14 patients (15.91 %) were treated correctly and according to LR, it was 20 (22.73 %) patients. Specifically, statistically significant improvement according to RHP occurred in the parameter of choice of ATB in AP; the parameters of indication and choice of ATB improved in the treatment. According to LR, there was statistically significant improvement in the dose and duration of ATB infusion in AP; in treatment, it was in the choice of ATB. The duration of the problems and the CRP value before surgery and complications incidence statistically significantly influenced the length of hospitalization.

**Conclusions:** After the implementation of RHP, there was an improvement in the adherence of health care workers to RS. However, in some parameters there is space for improvement in the future. Adherence rate remained alarmingly low in the timing of the initial dose of AP. In the treatment, the dose interval of ATB from AP showed a low adherence rate of workers.

**Key words:** appendicitis, appendectomy, antibiotic prophylaxis, treatment, paediatrics.