 ISSN 2221-2582

UDC 6.61.616.346.2-002; 6.65.658.562.47
DOI: 10.56871/CmN-W.2023.32.17.013

OBJECTIVE INDICATORS OF THE QUALITY OF MEDICAL CARE FOR PATIENTS WITH ACUTE APPENDICITIS

© Maksim V. Gavshchuk[1], Irina M. Barsukova[2], Andrey E. Demko[2], Oleg V. Lisovskii[1], Rostislav V. Vashetko[2], Ivan A. Lisitsa[1], Milad M. Al-Khares[1], Tatyana A. Nickolskaya[1]

[1] Saint Petersburg State Pediatric Medical University. Lithuania 2, Saint Petersburg, Russian Federation, 194100
[2] Saint Petersburg institute of emergency care named after I.I. Dzhanelidze. Budapeshtskaya st., 3, Russian Federation, Saint Petersburg, 192242

Contact information:
Maxim V. Gavshchuk — PhD, Associate Professor of the Department of General Medical Practice. E-mail: gavshuk@mail.ru
ORCID ID: 0000-0002-4521-6361

For citation: Gavshchuk MV, Barsukova IM, Demko AE, Lisovskii OV, Vashetko RV, Lisitsa IA, Al-Khares MM, Nickolskaya TA. Objective indicators of the quality of medical care for patients with acute appendicitis. Children's medicine of the North-West (St. Petersburg). 2023;11(1):102–105. DOI: https://doi.org/10.56871/CmN-W.2023.32.17.013

Received: 11.09.2022 **Revised: 17.11.2022** **Accepted: 15.01.2023**

Abstract. The article analyzes the timing of hospitalization, therapeutic and diagnostic measures in the hospital and morphological changes in remote appendix in patients with acute appendicitis treated at the St. Petersburg research Institute of emergency care I.I. Dzhanelidze in 2017. These indicators can serve as objective criteria for the quality of medical care in patients with acute appendicitis.

Key words: *quality of medical care; acute appendicitis; objective criteria of quality of medical care.*

ОБЪЕКТИВНЫЕ ПОКАЗАТЕЛИ КАЧЕСТВА ОКАЗАНИЯ МЕДИЦИНСКОЙ ПОМОЩИ БОЛЬНЫМ ОСТРЫМ АППЕНДИЦИТОМ

© Максим Владимирович Гавщук[1], Ирина Михайловна Барсукова[2], Андрей Евгеньевич Демко[2], Олег Валентинович Лисовский[1], Ростислав Вадимович Вашетко[2], Иван Александрович Лисица[1], Милад Мтанусович Аль-Харес[1], Татьяна Александровна Никольская[1]

[1] Санкт-Петербургский государственный педиатрический медицинский университет. 194100, г. Санкт-Петербург, ул. Литовская, 2
[2] НИИ скорой помощи им. И.И. Джанелидзе, 192242, Санкт-Петербург, Будапештская ул., 3

Контактная информация:
Максим Владимирович Гавщук — к.м.н., доцент кафедры общей медицинской практики. E-mail: gavshuk@mail.ru
ORCID ID: 0000-0002-4521-6361

Для цитирования: Гавщук М.В., Барсукова И.М., Демко А.Е., Лисовский О.В., Вашетко Р.В., Лисица И.А., Аль-Харес М.М., Никольская Т.А. Объективные показатели качества оказания медицинской помощи больным острым аппендицитом // Children's medicine of the North-West. 2023. Т. 11. № 1. С. 102–105. DOI: https://doi.org/10.56871/CmN-W.2023.32.17.013

Поступила: 11.09.2022 **Одобрена: 17.11.2022** **Принята к печати: 15.01.2023**

Резюме. В статье проанализированы сроки госпитализации, проведения лечебно-диагностических мероприятий в стационаре и морфологические изменения удаленных червеобразных отростков у больных острым аппендицитом, пролеченных в Санкт-Петербургском научно-исследовательском институте скорой помощи им. И.И. Джанелидзе в 2017 году. Эти показатели могут служить объективными критериями качества оказания медицинской помощи у больных острым аппендицитом.

Ключевые слова: *качество оказания медицинской помощи; острый аппендицит; объективные критерии качества оказания медицинской помощи.*

INTRODUCTION

Nowadays, an assessment of the quality of medical care is carried out in a formalized way according to the data of medical records. It is difficult to separate the defects of records in the case history from the real defects of the treatment process. At the same time, there are objective criteria of the quality of medical care: terms of hospi-

talization, examination and treatment, results of histological examination of removed biomaterial and results of pathological and anatomical examination in case of lethal outcome. These criteria are especially relevant for assessing the quality of medical care in patients with acute appendicitis (AA), in whom active surgical tactics are used [1].

Improvement of the emergency medical service has reduced the time of hospitalization of patients with suspected AA. For example, in 2017, 4674 patients with AA were treated in St. Petersburg hospitals. Some of them, 1529 (32.7%) patients, were hospitalized in the first 6 hours from the onset of the disease [2]. There is a probability of an increase in the number of removed appendix with catarrhal changes due to the early terms of surgery from the onset of the disease [1].

AIM

To study the terms of hospitalization, therapeutic and diagnostic measures in hospital in patients with AA, to analyze morphological changes of the removed appendices, which can be used as objective criteria of the quality of medical care.

MATERIALS AND METHODS

We analyzed the electronic case histories of patients treated at the St. Petersburg research institute of emergency medicine named after I.I. Janelidze and discharged with diagnoses of appendix in 2017, which corresponded to ICD-10 codes K35.2, K35.3, K35.3, and K35.3. The required data were obtained using the medical information system "Ariadna".

The time of admission to the Research Institute from the onset of the disease was determined using the recorded anamnesis morbi. For statistical analysis, rates were presented in decimal system with rounding to tenths of an hour. If a time interval was specified in the electronic case history, the corresponding arithmetic mean was used.

The duration of examination and observation before surgery was determined based on the time of admission to the hospital and the time of the start of surgery. The time from the onset of the disease to the start of surgery was determined by summarizing the indicators described above. Information about complications of AA at the time of surgical treatment was obtained by studying operation protocols. The results of histological examination were obtained by studying the journals of the pathology department of the Research Institute.

RESULTS AND DISCUSSION

In 2017, 384 patients with suspected acute appendicitis were delivered to the Research Institute. All patients were hospitalized in the inpatient emergency department on admission. Subsequently, in 316 (82.3%) cases, diseases of appendix were verified. The patients were aged between 19 and 91 years, with a mean age of 36.2±13.63 years. The patients included 188 (59.5%) males and 128 (40.5%) females.

The time to hospitalization from onset ranged from 1.5 to 264.0 hours (11 days), with a median of 14.0 hours, a mode of 24.0 hours, a 75% persentile of 24.0 hours, and a 25% persentile of 7.0 hours.

The time from onset of disease to surgery ranged from 6.5 to 268.7 hours, median — 22.0 hours, mode 48.0 hours, 75% persentile — 35.9 hours, and 25% persentile — 15.5 hours.

Appendectomy was performed laparoscopically in 271 (85.8%) cases, in 20 (6.3%) cases diagnostic laparoscopy with subsequent access conversion was performed. 22 (7.0%) patients were operated immediately by open appendectomy. In 1 (0.3%) case diagnostic laparoscopy without appendectomy was performed due to appendiceal infiltration. Conservative therapy of appendiceal infiltration was performed in 2 (0.6%) cases.

Histological examination of the removed appendix revealed catarrhal appendicitis in 23 (7.3%) cases, phlegmonous appendicitis in 232 (73.4%) cases, gangrenous appendicitis in 48 (15.2%) cases, and chronic appendicitis in 1 (0.3%) case. Dense appendiceal infiltration were diagnosed in 3 (0.9%) cases, which were treated conservatively. Tumors were detected in 6 (1.9%) cases: carcinoid (3) and mucinous adenocarcinoma (1), sigmoid colon cancer with infiltrate formation (1), non-Hodgkin's lymphoma (1).

Catarrhal appendicitis was verified in 23 (7.3%) cases. There were 11 (47.8%) men and 12 (52.2%) women among the operated patients. Patients were aged from 19 to 63 years, with an average age of 32.7±11.83 years. The time from onset to hospitalization ranged from 2.75 to 120.0 hours, median — 14.0 hours, mode — 6.0 hours, 75% persentile — 24.0 hours, and 25% persentile — 6.0 hours. The duration of examination and follow-up from referral to surgery ranged from 2.68 to 35.0 hours, median — 7.0 hours, mode — none, 75% persentile — 10.9 hours, and 25% persentile — 4.5 hours. The time from disease onset to surgery was from 7.5 to 120 hours, median — 24.0 hours, mode — 36.0 hours, 75% persentile — 36.0 hours, 25% persentile — 16.8 hours.

ISSN 2221-2582

Phlegmonous and phlegmonous-ulcerous appendicitis were verified by histological examination in 232 (73.4%) cases. The operated patients in this group were 141 (60.8%) males and 91 (39.2%) females. The patients were aged from 19 to 85 years, with an average age of 34.6±12.01 years.

Time of admission to the Research Institute ranged from 1.5 to 264 hours from onset, median — 12.8 hours, mode — 24.0, 75% persentile — 24.0 hours, and 25% persentile — 6.9 hours. Times of preoperative examination and observation ranged from 1.9 to 47.0 hours, median — 6.6 hours, mode — 4.0, 75% persentile — 10.3 hours, and 25% persentile — 4.6 hours.

Summary, operative time from onset ranged from 6.5 to 264.0 hours, median — 20.5 hours, mode — 48.0 hours, 75% pesentile — 31.0 hours, and 25% persentile — 15.0 hours.

Gangrenous appendicitis was verified with use of histological examination in 48 (15.2%) cases. There were 30 (62.5%) males and 18 (37.5%) females. The patients were aged from 19 to 80 years, with an average age of 43.1±16.53 years. The time of admission to the Research Institute from onset ranged from 3.0 to 168.0 hours, with a median of 27.0 hours, a mode of 48.0 hours, a 75% persentile of 48.0 hours, and a 25% persentile of 12.8 hours. The time from examination and follow-up to surgery ranged from 2.8 to 23.5 hours, median — 6.8 hours, mode — 9 hours, 75% persentile — 9.1 hours, and 25% persentile — 4.7 hours. The time from onset to surgery ranged from 10.0 to 176.0 hours, median — 33.3 hours, mode 48.0 — hours, 75% persentile — 52.0 hours, and 25% persentile — 23.0 hours. Complicated forms of gangrenous appendicitis were diagnosed intraoperatively in 41 (85.4%) cases.

Among 316 patients with diseases of appendix, 128 (40.5%) cases of intra-abdominal complications were diagnosed intraoperatively. In catarrhal appendicitis there were no intra-abdominal complications.

Localized unconfined peritonitis was a complication of gangrenous appendicitis in 13 cases, and phlegmonous appendicitis — in 46 cases, in total detected in 59 cases. The patients included 38 (64.4%) males and 21 (35.6%) females. The age of the patients ranged from 19 to 80 years, with an average age of 37.5±14.84 years. Hospitalization time from onset ranged from 2.0 to 120.0 hours, with a median of 21.5 hours, a mode of 24.0 hours, 75% persentile of 24.0 hours, and 25% persentile of 11.4 hours. Preoperative examination and follow-up times ranged from 1.9 to 22.8 hours, median — 6.4 hours, mode — 4.0 hours, 75% persentile — 9.4 hours, and 25% persentile — 4.4 hours. Thus, the time from onset to surgery ranged from 6.7 to 132.2 hours, median — 27.0 hours, mode — 72.0 hours, 75% persentile — 36.0 hours, and 25% persentile — 18.4 hours.

In gangrenous appendicitis localized peritonitis was serous in 9 cases, serous-fibrinous — in 2 cases, fibrinous-purulent — in 1 case and purulent — in 1 case. In phlegmonous appendicitis, serous localized unconfined peritonitis was detected in 34 cases, serous-fibrinous — in 8 cases, fibrinous-purulent — in 2 cases, purulent — in 1 case.

Thus, localized serous unconfined peritonitis was the most frequent — 43 cases, which amounted 33.6% of all complications in patients with AA. The majority of patients (37) were operated laparoscopically, in 5 cases the operation was performed by traditional access, in 4 cases — by laparotomy. In the postoperative period, there were 2 cases of local complications of the postoperative wound.

Diffuse peritonitis was diagnosed in 13 cases, including gangrenous appendicitis in 10 cases and phlegmonous appendicitis in 3 cases. Serous-fibrinous diffuse peritonitis was diagnosed in 4 cases, fibrinous-purulent — in 4 cases, purulent — in 6 cases and fecal — in 1 case. The age of patients was from 21 to 67 years, with a mean age of 44.5±13.84 years. The time of hospitalization from onset ranged from 6.0 to 96.0 hours, median — 31.0 hours, mode — 9 hours, 75% persentile — 48.0 hours, and 25% persentile — 9.0 hours. The time from admission to hospital to surgery was 2.6 to 11.2 hours, median — 4.9 hours, mode — no, 75% persentile — 6.6 hours, and 25% persentile — 4.3 hours. The time from onset to surgery ranged from 11.0 to 100.4 hours, median — 34.0 hours, mode — 48.0 hours, 75% persentile — 48.0 hours, and 25% persentile — 17.0 hours. Laparoscopic surgery was performed in 4 cases of diffuse peritonitis, and 1 case underwent sanation re-laparoscopy. Laparotomy was required in 9 cases.

Appendiceal infiltrates were diagnosed in 67 cases. The patients were aged from 20 to 80 years, with an average age of 43.2±15.5 years. Hospitalization time from onset ranged from 3.0 to 264 hours, median — 24.0 hours, mode — 48.0 hours, 75% persentile — 72.0 hours, 25% persentile — 11.4 hours. The time from hospitalization to surgery was 1.9 to 34 hours, median — 6.8 hours, mode — 5.8 hours, 75% persentile — 12.0 hours, and 25% persentile — 4.7 hours. The time to surgery from onset ranged from 6.5 to 268.7 hours, median — 30.8 hours, mode —

48 hours, 75% persentile — 56.7 hours, 25% persentile — 20.5 hours.

Conservative treatment without surgery was performed in 2 cases, diagnostic laparoscopy followed by conservative therapy in 1 case. In the remaining 64 cases infiltrate separation with appendectomy was performed: in 4 cases the operation was immediately performed by traditional access according to Diakonov-Volkovich-McBourney. In 13 cases laparoscopic operation with subsequent conversion to laparotomy was performed. Laparoscopic surgery was performed in 47 cases.

On the one hand, early hospitalization is an indicator of the success of the emergency medical service and reduces the risk of developing complicated forms of AA. On the other hand, early hospitalization complicates diagnostics and may lead to an increase in the number of removal appendices with catarrhal changes.

However, an observation in doubtful cases compensated for early hospitalization and reduced the proportion of operations for catarrhal appendicitis to 7.3%. At the same time, there was only 1 (0.3%) case of removal of appendix with signs of chronic appendicitis only. The number of appendectomies for catarrhal appendicitis is slightly higher than the average level of indicators, which reaches 1% in laparoscopic surgeries due to the active tactics adopted rather than the timing of hospitalization [3–5]. In addition, the total proportion of removed appendices with catarrhal and chronic changes corresponds to the literature data [3, 4].

CONCLUSION

The terms of hospitalization, performance of diagnostic and therapeutic measures, as well as the results of histological examination of removed appendices can be used as criteria of the quality of medical care in patients with AA. These criteria are objective and allow differentiating between defects in medical records and real defects in the process of medical care.

Early hospitalization of patients with suspected acute appendicitis does not increase the number of removed appendices with catarrhal and chronic changes. This is achieved due to the tactics of dynamic observation in patients with suspected acute appendicitis. Hospitalization of patients with suspected acute appendicitis to an inpatient emergency department for observation allows to avoid overloading specialized surgical departments with non-core patients.

REFERENCES

1. Gavshchuk M.V., Gostimskiy A.V., Barsukova I.M. i dr. Evolyutsiya khirurgicheskoy taktiki pri ostrom appenditsite [Evolution of surgical tactics in acute appendicitis]. Skoraya meditsinskaya pomoshch'. 2019; 2: 74–82. DOI: 10.24884/2072–6716–2019–20–2-74–82. (in Russian).
2. Demko A.Ye., Barsukova I.M., Barbashova Ye.I. Informatsionnyye materialy po neotlozhnoy khirurgicheskoy pomoshchi pri ostrykh khirurgicheskikh zabolevaniyakh organov bryushnoy polosti v Sankt-Peterburge za 2017 god [Information materials on emergency surgical care for acute surgical diseases of the abdominal organs in St. Petersburg for 2017]. Pod red. prof. V.Ye. Parfenova. Sankt-Peterburg: Stiks Publ.; 2018. (in Russian).
3. Diagnostika i lechebnaya taktika pri ostrykh khirurgicheskikh zabolevaniyakh zhivota i grudi [Diagnosis and treatment tactics in acute surgical diseases of the abdomen and chest]. Pod red. Akimova V.P. Sankt-Peterburg: Izd-vo SZGMU im. I.I. Mechnikova; 2018. (in Russian).
4. Kriger A.G., Fedorov A.V., Voskresenskiy P.K., Sazhin A.V. Appenditsit [Appendicitis]. Moskva: Medpraktika-M Publ.; 2018. (in Russian).
5. Komissarov I.A., Kolesnikova N.G., Denisov A.A. Evolyutsiya cherveobraznogo otrostka i kharakter posleoperatsionnykh oslozhneniy u detey za posledniye 20 let [The evolution of the appendix and the nature of postoperative complications in children over the past 20 years]. Pediatr. 2017; 8(S1): M159. EDN ZWFVFL. (in Russian).

ЛИТЕРАТУРА

1. Гавщук М.В., Гостимский А.В., Барсукова И.М. и др. Эволюция хирургической тактики при остром аппендиците. Скорая медицинская помощь. 2019; 2: 74–82. DOI: 10.24884/2072–6716–2019–20–2-74–82.
2. Демко А.Е., Барсукова И.М., Барбашова Е.И. Информационные материалы по неотложной хирургической помощи при острых хирургических заболеваниях органов брюшной полости в Санкт-Петербурге за 2017 год. Под ред. проф. В.Е. Парфенова. СПб.: Стикс; 2018.
3. Диагностика и лечебная тактика при острых хирургических заболеваниях живота и груди. Под ред. Акимова В.П. СПб.: Изд-во СЗГМУ им. И.И. Мечникова; 2018.
4. Кригер А.Г., Федоров А.В., Воскресенский П.К., Сажин А.В. Аппендицит. М.: Медпрактика-М; 2018.
5. Комиссаров И.А., Колесникова Н.Г., Денисов А.А. Эволюция червеобразного отростка и характер послеоперационных осложнений у детей за последние 20 лет. Педиатр. 2017; 8(S1): M159. EDN ZWFVFL.