Nov 19, 2020

OPAT in an area with a high prevalence of MDR bacteria

PLOS One

Thais Thais Salles[1], Eduardo Alexandrino Medeiros[1]

[1]Universidade Federal de São Paulo

1 Works for me dx.doi.org/10.17504/protocols.io.bmuyk6xw

Thais Salles

ABSTRACT

Objectives: To identify factors associated with hospital admission and mortality within the first 30 days after enrolment in an outpatient parenteral antimicrobial therapy (OPAT) program, also analysing adequacy of the treatment regimen and clinical outcomes.

Patients and methods: This was a retrospective cohort study conducted between October 2016 and June 2017 in the state of São Paulo, Brazil. Variables related to hospital admission and mortality were subjected to bivariate analysis, and those with a $P<0.05$ were subjected to multivariate analysis as risk factors.

Results: We evaluated 276 patients, of whom 80.5% were ≥60 years of age and 69.9% had more than one comorbidity. Of the patients evaluated, 41.3% had pneumonia and 35.1% had a urinary tract infection. The most common etiological agent, isolated in 18 (31.6%) cases, was *Klebsiella pneumoniae*, and 13 (72,2%) strains were carbapenem resistant. The OPAT was in accordance with the culture results in 76.6% of the cases and with the institutional protocols in 76.4%. The majority (64.5%) of the patients were not admitted, and a cure or clinical improvement was achieved in 78.6%. Multivariate analysis showed that, within the first 30 days after enrolment, the absence of a physician office visit was a predictor of hospital admission ($P<0.001$) and mortality ($P=0.006$).

Conclusions: This study demonstrated the viability of OPAT in elderly patients with pulmonary or urinary tract infections in an area with a high prevalence of multidrug-resistant bacteria and that a post-discharge physician office visit is protective against hospital admission and mortality.

EXTERNAL LINK

https://doi.org/10.1371/journal.pone.0241595

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

Salles TCG, Cerrato SG, Santana TF, Medeiros EA (2020) Factors associated with successful completion of outpatient parenteral antibiotic therapy in an area with a high prevalence of multidrug-resistant bacteria: 30-day hospital admission and mortality rates. PLoS ONE 15(11): e0241595. doi: 10.1371/journal.pone.0241595

DOI

dx.doi.org/10.17504/protocols.io.bmuyk6xw

EXTERNAL LINK

https://doi.org/10.1371/journal.pone.0241595

PROTOCOL CITATION

Thais Thais Salles, Eduardo Alexandrino Medeiros 2020. OPAT in an area with a high prevalence of MDR bacteria. **protocols.io** https://dx.doi.org/10.17504/protocols.io.bmuyk6xw

MANUSCRIPT CITATION please remember to cite the following publication along with this protocol

Salles TCG, Cerrato SG, Santana TF, Medeiros EA (2020) Factors associated with successful completion of outpatient parenteral antibiotic therapy in an area with a high prevalence of multidrug-resistant bacteria: 30-day hospital admission and mortality rates. PLoS ONE 15(11): e0241595. doi: 10.1371/journal.pone.0241595

EXTERNAL LINK

https://doi.org/10.1371/journal.pone.0241595

KEYWORDS

Outpatient parenteral antimicrobial therapy

CREATED

Sep 29, 2020

LAST MODIFIED

Nov 19, 2020

PROTOCOL INTEGER ID

42616

ABSTRACT

Objectives: To identify factors associated with hospital admission and mortality within the first 30 days after enrolment in an outpatient parenteral antimicrobial therapy (OPAT) program, also analysing adequacy of the treatment regimen and clinical outcomes.

Patients and methods: This was a retrospective cohort study conducted between October 2016 and June 2017 in the state of São Paulo, Brazil. Variables related to hospital admission and mortality were subjected to bivariate analysis, and those with a $P<0.05$ were subjected to multivariate analysis as risk factors.

Results: We evaluated 276 patients, of whom 80.5% were ≥60 years of age and 69.9% had more than one comorbidity. Of the patients evaluated, 41.3% had pneumonia and 35.1% had a urinary tract infection. The most common etiological agent, isolated in 18 (31.6%) cases, was *Klebsiella pneumoniae*, and 13 (72,2%) strains were carbapenem resistant. The OPAT was in accordance with the culture results in 76.6% of the cases and with the institutional protocols in 76.4%. The majority (64.5%) of the patients were not admitted, and a cure or clinical improvement was achieved in 78.6%. Multivariate analysis showed that, within the first 30 days after enrolment, the absence of a physician office visit was a predictor of hospital admission ($P<0.001$) and mortality ($P=0.006$).

Conclusions: This study demonstrated the viability of OPAT in elderly patients with pulmonary or urinary tract infections in an area with a high prevalence of multidrug-resistant bacteria and that a post-discharge physician office visit is protective against hospital admission and mortality.

1 This was a retrospective cohort study conducted between October 2016 and June 2017. The patients evaluated were among those treated by OPAT via the Santa Helena/Amil UnitedHealth Group network, which comprises the 137-bed Santa Helena Hospital, a tertiary care hospital located in the city of Santo André, in the Brazilian state of São Paulo, as well as 12 outpatient clinics in adjacent municipalities.

2 The requests for inclusion in the OPAT program were made by the physicians, each of whom filled out a form with the data regarding the treatment, as well as the clinical and epidemiological characteristics of the patient in question. To be included in the program, patients were required to meet the following criteria: being clinically stable; having experienced

Citation: Thais Thais Salles, Eduardo Alexandrino Medeiros (11/19/2020). OPAT in an area with a high prevalence of MDR bacteria. https://dx.doi.org/10.17504/protocols.io.bmuyk6xw

no adverse events related to the first antimicrobial administration; having no history of psychiatric disorders or current drug addiction; having a cooperative family member or caregiver; having a contact telephone number; and having a means of transport. Patients who were candidates for oral antimicrobial treatment were excluded, as were those who were under 18 years of age, those who has previously undergone OPAT and those for whom no post-discharge physician office visit was scheduled. Also, if information regarding the outcome of the treatment was not reported, the patient was excluded from the study. To estimate 10-year mortality, the Charlson comorbidity score was calculated for each patient5. All comorbidities were registered according to each patient´s medical history and classified according to the International Classification of Diseases (ICD)6. The antimicrobial agents were administered at one of the Santa Helena/Amil UnitedHealth Group network health care facilities or in the home of the patient. Patients who were bedridden and whose family did not have a means of transport to one of the facilities were assigned antimicrobial treatment at home. The antibiotic at home was administered by the nursing staff assigned to visit the patient according to the antimicrobial scheme prescribed. All antibiotics were infused by gravity or in bolus. No serious infusion-related adverse events were reported.

3 The use of ceftriaxone, piperacilin-tazobactam, cefepime, amikacin, meropenem, teicoplanin and vancomycin was evaluated for the influence on hospital admission or mortality. Culture-guided adequacy of the OPAT regimen was defined as when the treatment was prescribed based on the results of the cultures. We determined whether each patient had visited a physician within the first 30 days after inclusion in the OPAT program, and we identified the reason for hospital admission (non-infectious disease, treatment failure or a new infection), as well as whether a cure or clinical improvement was achieved. Treatment failure was defined as the maintenance or worsening of an initial infectious condition, as evidenced by the appearance of new signs and symptoms or the exacerbation of existing symptoms.

4 Outcomes were classified as cure or clinical improvement; treatment failure; or death. The cure or clinical improvement outcome was defined as the resolution or improvement of an initial infectious condition, evidenced by the reduction or disappearance of signs and symptoms presented during the initial infectious process.

5 A database was constructed from October 2016 to June 2017 and accessed for the purpose of this study from October 2016 to July 2018. Patient data was obtained from the OPAT inclusion request forms and electronic medical records. The requirement for informed consent was waived by the research ethics committees. The variables were evaluated prospectively to determine factors related to hospital admission and death within the first 30 days after inclusion in the OPAT program.

6 In the statistical analysis, continuous variables were summarized as mean and standard deviation, whereas categorical variables were summarized as absolute and relative frequencies. To identify the factors that influenced hospital admission and mortality, a bivariate analysis of each factor was performed using the Student's t-test for independent samples (for associations of continuous variables) and the chi-square test (for associations of categorical variables). We performed an additional bivariate analysis excluding palliative care patients. In a subsequent multivariate analysis using multiple logistic regression models, the factors with a $P<0.05$ in the bivariate analysis were included as independent variables. We calculated odds ratios and the respective confidence intervals. Data processing and analysis were performed with the IBM SPSS Statistics software package, version 22.0 (IBM Corp., Armonk, NY, USA). Values of $P<0.05$ were considered statistically significant.

7 The project was approved by the Research Ethics Committees of the Federal University of São Paulo and of the Amil UnitedHealth Group. The requirement for informed consent was waived by both committees.

Citation: Thais Thais Salles, Eduardo Alexandrino Medeiros (11/19/2020). OPAT in an area with a high prevalence of MDR bacteria. https://dx.doi.org/10.17504/protocols.io.bmuyk6xw