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Outcomes and Readmissions of Bacteremia, Endocarditis and Osteomyelitis among Patients Treated with Outpatient Parenteral Antimicrobial Therapy (OPAT) in Infectious Disease Physician Office Infusion Centers (POIC)

Infectious Disease Services of Georgia

Abstract

Background: OPAT is well documented to be safe and effective. However, infections requiring long term therapy are frequently accompanied by high rates of readmissions, recurrences, and complications. An ID POIC offers a controlled setting for management of OPAT for serious infections, including bacteremia (BAC), endocarditis (IE) and osteomyelitis (OM). We evaluated outcomes and readmissions for patients (pts) receiving OPAT from this unique setting.

Methods: A retrospective, multicenter, observational review was completed in 7 POICs of pts ≥ 16 yrs receiving IVAB for BAC, IE or OM from January 1, 2010 to June 30, 2010. Data collected from the medical records included demographics, microorganisms, drug therapy characteristics and outcomes, including drug adverse events (AEs) and catheterrelated events. Clinical success was defined as cured or improved. Hospital readmissions during therapy and 6-month recurrence rates were identified for all patients. Comparisons were assessed using Fisher's exact test (p = 0.05 significant).

Results: Enrollment was 203 pts from all sites. Mean age was 59 yrs. Mean duration of therapy in the POIC was 31 days (BAC 20, IE 31, OM 37), with 32% of pts receiving all therapy in the POIC without hospitalization. Diabetes was the most prevalent comorbidity (75, 37%). Additional results are as follows:

	BAC	IE	OSTEO	Combined
	(n=54)	(n=26)	(n=123)	(n=203)
Clinical Success	50 (93%)	23 (88%)	115 (93%)	188 (93%)
Recurrence	7 (13%)	0	6 (5%)	13 (6%)
Readmission	5 (9%)	3 (12%)	11 (9%)	19 (9%)

Readmissions were due to drug-related AEs (4), device failure (4), disease exacerbation (3) and other medical complications (8). No statistical differences were seen with readmissions or recurrences between diagnoses. 26% of pts reported AEs related to IVAB. 7 pts (3.4%) had serious AEs requiring hospitalization or intervention. 3 pts (1.5%) had catheter device failures. The catheter infection rate was 0.57 per 1000 catheter days.

Conclusion: Treatment of BAC, IE and OM with OPAT is safe and effective in an ID POIC. Recurrence rates and unanticipated readmissions appear to be low, particularly for OM, and more favorable than previously reported in similar studies.

Introduction

OPAT is becoming a standard model for treating stable patients requiring long-term antibiotics. Over 250,000 patients are treated with outpatient intravenous antibiotics annually.¹ An ID POIC offers a controlled setting for treatment of osteomyelitis, bacteremia and infective endocarditis. The purpose of this study was to report outcomes, recurrence, readmissions and safety in patients receiving IVABs in POICs.

Methods

We retrospectively queried our database for all patients receiving IVAB for the specified indications (osteomyelitis, bacteremia and infective endocarditis) at each of the 7 participating POICs during the time period of January 1, 2010 to June 30, 2010. □ Patients were followed until IVAB discontinuation and through December 31, 2010 for recurrence, readmissions and outcomes.

□ Clinical success was defined as cured or improved.

Recurrence was defined as an infection manifesting at the same site from which it had already been eliminated. Time to recurrence was calculated from the last dose of treatment to date of re-infection.

Readmission was defined as a readmission to the hospital for any reason.

Exclusion criteria

 \Box Age < 18 years.

Data Analysis

Descriptive statistics (mean, standard deviation) were used for demographic and culture data.

Percentages were used for culture, safety and efficacy data.

Results

Table 1: Patient Demographics			
Characteristic	Osteomyelitis n=123 (%)		
Male	78 (63)		
Age, mean (years)	57.37		
Location prior to POIC			
Hospital	67 (54)		
Physician office/home	56 (46)		
Co-morbid conditions			
Active chemotherapy	4		
COPD/Asthma	5		
CRF/ESRD	6		
Diabetes	56		
History of heart valve defect	1		
Immunodeficiency	3		

data available.

data available.

Mean OPAT treatment days were 31







- □ 53 pts (26%) experienced 74 AEs related to IVAB. □ 7 pts (3%) had catheter-related adverse event. 4 pts had catheter-related infections.
- replacement

□ 7 pts (3.5%) reported serious AEs; 5 were directly related to the IVAB and required hospitalization (3) or additional intervention (2).

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3 pts (1.5%) had catheter device failures requiring removal or



There were no recurrences in IE pts, while BAC and OM pts recurred at a rate of 13% and 5%, respectively.



□ 4 readmissions (2%) were due to adverse drug reactions, 4 (2%) were □ Clinical Success rates were 88%, 93% and 93% for IE, BAC and due to device failure, 3 (1.5%) were related to disease exacerbation, and 8 (4%) were for other medical complications.

Discussion

population was less at 12% (31%).6

related to IVAB. reported.

Conclusions

Treatment of BAC, OM and IE in the POIC setting appears to be safe and effective. Recurrence and readmission rates for patients treated for OM, BAC and IE in the outpatient setting appear to be low and warrant further investigative study.



OM. respectively.

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□ A study recently published by Rehm et al reported clinical success of OPAT treatment of patients with *S. aureus* bacteremia with or without IE at 86.4%.² Success in our IE study population was 88% and 93% in the bacteremic patients. A recent study of IE treatment in the OPAT setting reported a readmission rate of 16%.³ The readmission rate in our IE study

90-day readmission rates for BAC have been reported as high as 72% in patients with resistant organisms.⁴ The readmission rate in our BAC study population was 9%. Clinical success for treatment of OM in our study population (93%) was comparable with best reported (69%-93%).^{5,6,7} □ Rates of recurrence of OM in our study population (5%) appeared to be significantly lower than previously studied

□ Only 26% of study patients experienced adverse events

□ The catheter infection rate in the study population was 0.57 per 1000 catheter days which was lower than previously

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