Prophylactic Antibiotics Did Not Decrease Recurrent Cholangitis in Patients with Biliary Atresia After Kasai Portoenterostomy

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Background

- Biliary atresia (BA) is a rare, progressive, idiopathic, fibro-obliterative disease of the extrahepatic biliary tree seen in children
- Current standard treatment is surgical management with Kasai portoenterostomy (KP)
- Bacterial cholangitis is a frequent complication following KP and an important determinant of long-term prognosis
- Use of prophylactic antibiotics is common but not universal and efficacy is controversial

Aim

- To study the impact of prophylactic antibiotics on the frequency of cholangitis episodes in patients with BA after KP

Setting and Methods

- Children's Hospital Los Angeles (CHLA) is a 400-bed referral academic pediatric hospital in Los Angeles, California
- Retrospective study, approved by the CHLA Institutional Review Board, of all patients with BA who underwent KP from November 2002 to July 2019
- Chart review was conducted to evaluate patient demographic information, use of prophylactic antibiotics after KP, number of cholangitis episodes after KP, time to liver transplantation (LVT), and survival
- Diagnosis of cholangitis was assessed using the Tokyo 2018 diagnostic criteria

Table 1. Characteristics of Patients in the Prophylaxis and No-prophylaxis Groups

	Antibiotic prophylaxis (n=72)	No-prophylaxis (n=19)	P-value
Age at KP (weeks) mean (range)	9.7 (4-16)	8.6 (2-12)	0.2
Sex, No. (%)			
male	29 (40.3%)	7 (36.8%)	0.79
female	43 (59.7%)	12 (63.2%)	
Race, No. (%)			
Caucasian/non-Hispanic	15 (20.8%)	2 (10.5%)	0.38
Hispanic	31 (43.1%)	8 (42.1%)	
Asian	10 (13.9%)	1 (5.3%)	
other	16 (22.2%)	8 (42.1%)	
Duration of antibiotic prophylaxis (months) median (interquartile range [IQR])	7 (4-12.5)	N/A	

Figure 1. Patient Selection for Investigation of Antibiotic Prophylaxis After KP

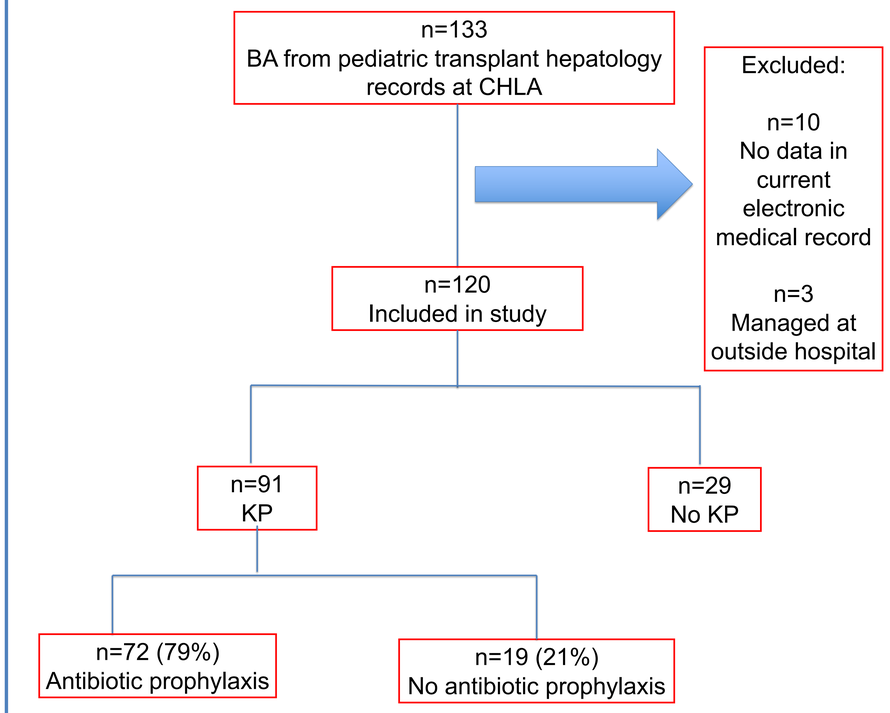
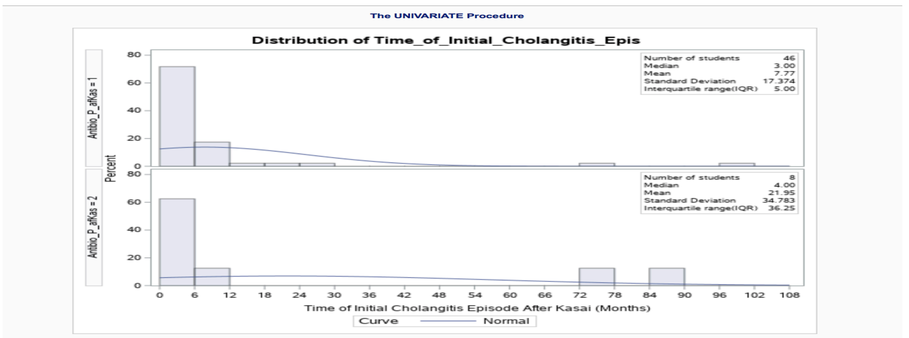


Table 2. Impact of Prophylactic Antibiotics in the Period Between KP and LVT

	Antibiotic prophylaxis * (n=72)	No-prophylaxis (n=19)	P-value
Number of cholangitis episodes per patient, median (IQR)	1 (0-2)	0 (0-1)	**0.02**
Time to LVT in months, median (IQR)	8 (5-13.5)	7 (5-11)	0.88
Deceased, n	0	0	

* In the antibiotic prophylaxis group, 57 (79.2%) received trimethoprim-sulfamethoxazole (TMP-SMX) alone and 15 (20.8%) received multiple/other antibiotics.

Figure 2. Time of Initial Cholangitis Episode After KP (Antibiotic Prophylaxis Group vs. No-prophylaxis Group)



Top: Of the 72 patients in the antibiotic prophylaxis group, 46 had cholangitis episodes and 74% had cholangitis within the first 6 months after KP.

Bottom: Of the 19 in the no-prophylaxis group, only 8 had cholangitis episodes and 62% occurred within the first 6 months following KP.

Table 3. Patients with Blood Culture-positive Cholangitis After KP (n=7)

Case No	Antibiotic prophylaxis	Time after KP (months)	Blood culture result	Resistance	Living or Deceased
1	TMP-SMX	4	*H. influenzae* (non-Hib, no B-lactamase)	None	Living
2	TMP-SMX Cefdinir	1.5	*E. coli*	TMP-SMX	Living
3	TMP-SMX	6	*K. pneumoniae*	TMP-SMX	Living
4	TMP-SMX	2	*E. coli*	None	Living
5	TMP-SMX Amoxicillin/Clavulanate	2.5	*E. coli*	TMP-SMX Ciprofloxacin	Living
6	TMP-SMX Cefixime Ciprofloxacin	3.5	*E. coli*	TMP-SMX Piperacillin/Tazobactam	Living
7	TMP-SMX	7	*E. Coli*	TMP-SMX	Living

Conclusions

- Antibiotic prophylaxis was frequently used after KP
- TMP-SMX was the most common antibiotic used
- Patients in the no-prophylaxis group had significantly fewer cholangitis episodes compared to those receiving antibiotic prophylaxis
- Prophylactic antibiotics did not have an impact on time to LVT after KP
- Our single center findings suggest that antibiotic prophylaxis is not helpful in decreasing the frequency of cholangitis episodes after KP
- Prophylactic antibiotics may increase the risk for infections with resistant bacteria
- Larger, multi-center, prospective, randomized control studies are recommended