

National Essential Medicine List Review
Primary Level of Care
Amoxicillin-clavulanic acid in urinary tract infections in paediatrics

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The most common causative agent for urinary tract infection (UTI) in children is due to *Escherichia coli*. (1) Antibiotic therapy should be guided by the local resistance patterns. International studies show a high susceptibility of *E. coli* to amoxicillin-clavulanate acid from samples from children with UTIs. (1,2) There are no head-to-head randomised control trials of different oral antibiotics in the treatment of urinary tract infection in children.

Please note: references are made to a Cochrane analysis on this subject, however their site has been down for the last week at least, and I have been unable to get this article.

Short review of the two attached articles:

1]

A study in children aged 3 to 12 months, with their first febrile UTI, compared an historical cohort with intravenous therapy (of amoxicillin-clavulanic acid) to a prospective cohort of 51 children treated with oral amoxicillin-clavulanic acid 40 mg/kg/day for 10 days. The main organism isolated was *Escherichia coli*, all isolates susceptible to amoxicillin-clavulanic acid.(3)

Efficacy

Defervescence after initiation with antibiotics was statistically significantly shorter with intravenous antibiotic (oral therapy – 23.8H; IV therapy – 14.4H; p=0.004), and time to discharge was statistically significantly shorter with oral therapy (oral therapy 70.9H; IV therapy 88.7H; p=0.003). (3)

Safety

Four infants (7.8%) experienced minor gastrointestinal side effects to amoxicillin-clavulanic acid and were changed to cefixime.(3)

2]

A non-inferiority, randomised, controlled trial (open label) allocated either oral amoxicillin-clavulanic acid 50 mg/kg/day for 10 days, or parenteral treatment with ceftriaxone 50 mg/kg/day for 3 days, thereafter amoxicillin-clavulanic acid oral 50 mg/kg/day for 7 days. (4)The target population was children from 1 month to less than 7 years of age, with clinical pyelonephritis. The primary end point of rate of renal scarring after 12 months did not differ significantly between the groups (risk difference -4%; 95% confidence interval -11.1% to 3.1%). There was no difference between treatments for the secondary outcomes of: time to defervescence, reduction in inflammatory indices, and percentage with sterile urine 72H after treatment initiation. Hospital stay was similar in both treatment groups (5.17 and 5.05 days). Fifteen (6.1%) children experienced minor side effects with amoxicillin-clavulanic acid (13: diarrhoea/vomiting or both, 1: mild erythema; 1: neutropenia). Ten of these children required change in antibiotic. Of the ceftriaxone arm, three (1.2%) children experienced minor side effects (1: diarrhoea; 1: mild erythema; 1: candida). No changes to treatment were required. In 7 children, amoxicillin-clavulanic acid could not be used due to antibiotic resistance.

Comments

Amoxicillin-clavulanic acid appears to be effective taken orally between 40 – 50 mg/kg/day for 7 to 10 days in the treatment of uncomplicated UTI in children under 7 years of age, when the infectious organism is susceptible to this agent. The side effects are minimal, such as gastrointestinal disturbances and mild erythema. The oral route is also safer and more cost effective than the intravenous route. (5)

References

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4. Montini G, Toffolo A, Zucchetta P, Dall'Amico R, Gobber D, Calderan A, et al. Antibiotic treatment for pyelonephritis in children: multicentre randomised controlled non-inferiority trial. *British Medical Journal* [Internet]. 2007 Aug 25 [cited 2013 May 2];335(7616):386. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1955287&tool=pmcentrez&rendertype=abstract>
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