European Society for Developmental Perinatal and Paediatric Pharmacology Congress, Basel, 28–30 May 2019

ORAL PRESENTATIONS

001 DRUG-RELATED HOSPITAL ADMISSIONS IN PAEDIATRICS – WHAT IS PREVENTABLE?

I Toni*, S Wimmer, R Trollmann, W Rascher, A Neubert. *Department of Paediatrics and Adolescent Medicine, Universitätsklinikum Erlangen, Erlangen, Germany*

10.1136/archdischild-2019-esdppp.1

Background Safety of paediatric pharmacotherapy is of major concern. Due to high off-label use (about 46–64% of patients in primary care are affected), missing paediatric dosage forms and complex dosage calculations, adverse drug reactions (ADR) and medication errors (ME) occur more often in children.^{1–3} Moreover, it is estimated that 3 to 5% of paediatric hospital admissions are drug-related.^{3–7}

The aim of the present study was to systematically investigate the nature and preventability of drug-related hospital admissions in paediatrics.

Methods An observational study was carried out for 10 months at the Department of Paediatrics and Adolescent Medicine Erlangen, Germany. All patients aged 0 to <18 years, admitted during the study period and treated for at least 24 hours at the general paediatric ward were assessed and analysed with regard to ADR and ME requiring hospitalisation. The identification of these was based on intensive chart review. Seriousness was assessed using the ICH E2A criteria.⁸

Results 741 patients fulfilled the inclusion criteria and were screened for ADR and ME leading to hospital admission. Median age of patients was 7 years (IQR 1 – 13) while duration of stay was 2 days (IQR 2 – 4) at median level. In total 50 events were discovered in relationship to drug intake before hospitalisation; 41 (82.0%) of these were assessed with the seriousness criterion 'requires inpatient hospitalisation', while 23 (56.1%) events were preventable and therefore considered as ME. The incidence of drug-related hospital admissions was 5.5%.

Conclusions This study confirms that drug-related hospital admissions pose a significant problem in children and adolescents, however more than 50% of them were considered preventable. Increasing awareness towards paediatric pharmacotherapy and providing standardised guidance may help to reduce the risk for drug-related hospital admissions.

REFERENCES

1. Kimland E, Odland V. Off-label drug use in pediatric patients. *Clin Pharmacol Ther* 2012;**91**:796–801.
2. Wong IC, Ghaleb MA, Franklin BD, Barber N. Incidence and nature of dosing errors in paediatric medications: a systematic review. *Drug Saf* 2004;**27**:661–70.
3. Smyth RM, Gargon E, Kirkham J, *et al.* Adverse drug reactions in children—a systematic review. *PLoS One* 2012;**7**:e24061.
4. Rashed AN, Wong IC, Cranswick N, Tomlin S, Rascher W, Neubert A. Risk factors associated with adverse drug reactions in hospitalised children: international multicentre study. *Eur J Clin Pharmacol* 2012;**68**:801–10.

5. Smyth RL, Peak M, Turner MA, *et al.* ADRC: Adverse drug reactions in children—a programme of research using mixed methods. *Programme Grants Appl Res* 2014;**2**.
6. Gallagher RM, Mason JR, Bird KA, *et al.* Adverse drug reactions causing admission to a paediatric hospital. *PLoS One* 2012;**7**:e50127.
7. Neubert A, Dormann H, Weiss J, Criegee-Rieck M, Ackermann A, Levy M, Brune K, Rascher W. Are computerised monitoring systems of value to improve pharmacovigilance in paediatric patients? *Eur J Clin Pharmacol* 2006;**62**:959–65.
8. ICH Expert Working Group. Clinical Safety Data Management: Definitions and Standards for Expedited Reporting E2A. 1994.

Disclosure(s) Nothing to disclose.

002 DEVELOPMENTAL PHARMACOGENETICS OF SLCO2B1 ON MONTELUKAST PHARMACOKINETICS IN CHINESE CHILDREN

¹Q Li, ¹K Wang, ¹H-Y Shi, ¹Wu Y-E, ¹Y Zhou, ¹M Kan, ¹Y Zheng, ¹G-X Hao, ¹X-M Yang, ¹Y-L Yang, ¹Su L-Q, ²X-L Wang, ³E Jacqz-Aigrain, ¹W Zhao*. ¹Shandong University, Jinan; ²Beijing Children's Hospital, Beijing, China; ³Hôpital Robert Debré, Paris, France

10.1136/archdischild-2019-esdppp.2

Background Montelukast, a potent orally selective leukotriene-receptor antagonist, inhibits the action of cysteinyl-leukotriene in patients with asthma. Although pharmacokinetic studies of montelukast have been reported in Caucasian adults and children, and showed significant inter-individual variability on pharmacokinetics. None of pharmacokinetic study has been explored in Chinese children. Given the potential inter-ethnic difference, the purpose of this study was to evaluate the effects of developmental factors and pharmacogenetics of CYP2C8 and SLCO2B1 on Montelukast pharmacokinetics in Chinese paediatric patients.

Methods After oral administration with montelukast, opportunistic samples were collected from asthma children and plasma concentrations were determined by high performance liquid chromatography coupled with fluorescence detector (HPLC-FLD) method. Population pharmacokinetic analysis was performed using a nonlinear mixed-effects model approach (NONMEM V 7.2.0) and variants of CYP2C8 and SLCO2B1 were genotyped.

Results Fifty patients (age range 0.7–10.0 years) with asthma were enrolled in this study. The clearance of montelukast was significantly higher in subjects with SLCO2B1 c.935GA and c.935AA genotype compared with SLCO2B1 c.935GG subjects (0.94 ± 0.26 versus 0.77 ± 0.21 , $p = 0.020$). Weight was also found to be significantly corrected with montelukast clearance ($p = 0.0001$).

Conclusions The developmental pharmacogenetics of montelukast in Chinese children was evaluated. Weight and SLCO2B1 genotype showed independently significant impacts on the clearance of montelukast.

Disclosure(s) Nothing to disclose.

003 ALLERGY TO PENICILLINS IN A PEDIATRIC POPULATION: REPORTED VS TRUE

AA Elzagallaai*, H Gill, MJ Rieder. *Paediatrics, Western University, London, ON, Canada*

10.1136/archdischild-2019-esdppp.3

Background Reported allergy to penicillins is a major clinical problem. Over 10% of parents report drug allergy resulting in