A445 - Prevalence and prognostic value of abnormal liver test results in critically ill children and the impact of nutrition hereon.

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Introduction:
Critical illness-induced liver test abnormalities are associated with complications and death in adult ICU patients, but remain poorly characterized in the pediatric ICU (PICU). In the PEPaNIC RCT, delaying initiation of parenteral nutrition to beyond day 7 (late PN) was clinically superior to providing PN within 24h (early PN), but resulted in a higher rise in bilirubin. We aimed to document prevalence and prognostic value of abnormal liver tests and the impact of withholding early PN in the PICU.

Methods:
We performed a preplanned secondary analysis of 1231 of the 1440 PEPaNIC patients aged 28 days to 17 years, as neonatal jaundice was considered a confounder. Plasma concentrations of total bilirubin, ALT, AST, γGT, ALP were measured systematically during PICU stay. Analyses were adjusted for baseline characteristics including severity of illness.

Results:
During the first 7 PICU days, the prevalence of cholestasis (>2mg/dl bilirubin) ranged between 3.8%-4.9% and of hypoxic hepatitis (≥20-fold ULN for ALT and AST) between 0.8%-2.2%, both unaffected by the use of PN. Throughout the first week in PICU plasma bilirubin concentrations were higher in late PN patients (p<0.05), but became comparable to early PN patients as soon as PN was started on day 8. Plasma concentrations of γGT, ALP, ALT and AST were unaffected by PN. High day 1 plasma concentrations of γGT, ALT and AST (p≤0.01), but not ALP, were independent risk factors for PICU mortality. Day 1 plasma bilirubin concentrations displayed a U-shaped association with PICU mortality, with higher mortality associated with bilirubin concentrations <0.20mg/dl and >0.76mg/dl (p≤0.01).

Conclusion:
In conclusion, overt cholestasis and hypoxic hepatitis were rare and unrelated to nutritional strategy. However, accepting a large macronutrient deficit during week 1 increased plasma bilirubin. A mild elevation of bilirubin on the first PICU-day was associated with lower risk of death and may represent an adaptive stress response rather than true cholestasis.