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N-Acetyl Cysteine in Non-Acetaminophen Pediatric Acute Liver Failure: Recent evidence !

We read with interest the current consensus statement on management of acute liver failure in infants and children [1]. Pediatric acute liver failure (ALF) is a devastating disease in which previously healthy children rapidly lose hepatic function due to a variety of causes and become critically ill within days. Management is largely supportive and only few conditions are amenable to directed therapy, such as acute acetaminophen toxicity. N-acetyl cysteine (NAC) replenishes mitochondrial and cytosolic glutathione stores and is the treatment of choice for acute acetaminophen toxicity. Studies in the past have shown some role of NAC in non-acetaminophen ALF [2,3].

The writing committee stated that there is increasing evidence for use of NAC infusion in non-acetaminophen causes of ALF [1]. They recommended routine use of NAC in the dose of 100 mg/kg/day in all cases of ALF irrespective of the etiology. This was based on a retrospective single site review involving 170 children done by Kortsalioudaki, *et al.* [2]. In this study NAC was associated with a shorter length of hospital stay, higher incidence of native liver recovery without transplantation, and better survival after transplantation.

However, a recent well designed placebo controlled trial conducted by the Pediatric Acute Liver Failure Study Group does not support the broad use of NAC in non-acetaminophen Pediatric ALF [4]. This multi-centre trial

included 184 children under the age of 18 years. The study group found that NAC did not improve 1-year survival in children with non-acetaminophen ALF. One-year liver transplant free survival was significantly lower in the NAC-treated group, especially among children less than 2 years of age with HE grade 0-1. This study emphasized the importance of conducting prospective pediatric drug trials.

With the availability of new evidence in recent literature, indiscriminate use of NAC in all cases of pediatric ALF is not justified.

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Should N-acetylcysteine be used in Treatment of Non-acetaminophen Pediatric Acute Liver Failure?

In a recently published consensus statement on management of acute liver failure, the authors have

recommended the use of N-acetylcysteine in the treatment of children with non-acetaminophen pediatric acute liver failure [1]. Intravenous N-acetylcysteine (NAC) was incorporated into the general management of acute liver failure following a small uncontrolled study suggesting improved cardiovascular hemodynamics and oxygen transport in liver failure in adults [2]. In pediatric population, NAC became popular after a retrospective