First UK multicenter study to review the Efficacy of Nutritional Treatment Strategies in the Management of Post-cardiothoracic surgical chylothorax

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BACKGROUND:
• Incidence of chylothorax has increased 0.9% -1.5% to 6.6%
• No agreement regarding efficacy of Long Chain Triglyceride (LCT) reduction in reducing chylous output

AIM:
1 - Primary aim: Investigate daily LCT intakes throughout the entire course of diet therapy and compare against the nationally accepted guidelines.
2 - Secondary Aims: To investigate the efficacy of diet therapy changes and reducing LCT intakes upon drain output. To compare participating centre guidelines

Methods: A multi-centre prospective observational study conducted between January 2013 and January 2014 reviewing routine diet therapy of paediatric congenital heart patients diagnosed with chylothorax. Daily LCT intakes and drain outputs were recorded. Regression analysis investigated relationships between feed type and drain output, the effect of age and LCT intakes on the relationship between feed and output and the effect of LCT intake on output.

Results: 51 children enrolled < 18 months of age. 5 children died. 68% of chylothoraces resolved with standard first line diet therapy.20% resolved with > 2 changes to diet therapy

FEEDS: Feed 1:Reduced LCT formula (Monogen), Feed 2: Fat free modular feed with IV intralipids, Feed 3: TPN and Feed 4= Reduced LCT (solid diet)

• When feed 1 and 4 were compared: Feed 4 had a significant effect (p=0.005) on output. When correcting for the effect of LCT and age, feed 4 gives a higher output than feed 1 by 0.58mls for every unit increase in age, therefore the effects of LCT are marginally significant.
• In patients who received > 2 types of diet therapy but only received feeds 1,3 and 4 there was a significant (p=<0.001) decrease in drain output with feed 3 after correcting for the effect of LCT intake
• In patients that received > 2 types of diet therapy and received feed type 2 there was a decrease in drain output but this was not significant (p= 0.13) however the small sample size was 8 children in the group that received feed 2
• Logistic regression showed there was no effect of output on survival after correcting for LCT and age
• This investigation identified that the Royal Brompton Hospital was the only hospital to use a three staged diet therapy approach thereby avoiding direct transition to TPN. All other centres proceeded to TPN if standard diet therapy failed.

Conclusion:
1. Children who respond to standard diet therapy all exceeded the nationally accepted guideline with no reocurrence of symptoms.
2. LCT free enteral feeds can reduce drain output and avoid the use of TPN as per step 2 of the Royal Brompton guideline.
3. The duration and timing of diet therapy could potentially be reduced to 4 weeks in patients that respond to standard diet therapy treatment.
4. Further investigation is required to establish evidence based effective guidelines for the management of this high risk post operative complication