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Category 1 :Renal failure - extracorporeal support

Category 2 :Cardiovascular - other

A412 - An investigation into haemodynamic stability during intermittent haemodialysis in the critically ill

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Introduction:

Studies that have reported cardiovascular (CVS) instability with haemodialysis (HD) are outdated and small. By analysing sessions in detail it will be possible to identify the frequency and nature of CVS instability.

Hypothesis 1: Haemodialysis is associated with CVS instability in the majority of sessions. Hypothesis 2: The majority of CVS changes in unstable sessions will be harmful/potentially harmful.

Methods:

Data was collected for 209 patients, identifying 1605 dialysis sessions. Analysis was performed on hourly records, classifying sessions as stable/unstable by a cutoff of >+/-20% change in baseline physiology (HR/MAP). Data from 3 hours prior, and 4 hours after dialysis was included, and average and minimum values derived. 3 time comparisons were made: pre-HD:during, during HD:post, pre:post-HD. If a session was identified as being unstable, then the nature of instability was examined by recording whether changes crossed defined physiological ranges. The changes seen in unstable sessions could be described as to their effects: being harmful/potentially harmful, or beneficial/potentially beneficial.

Results:

Discarding incomplete data, 1563 sessions were analysed. A session was deemed to be stable if there was no change >+/-20% in time-averaged or minimum MAP/HR across three time comparisons. In 1563 sessions there was stability in 874 sessions (55.8%, 95% CI for SEM 53.2-58.4). Hypothesis 1 is rejected.

Each session had 12 potential comparisons of MAP, HR and time, therefore the 689 unstable sessions there were 8268 potential changes +/-20% (689 x 12). There were 804/8268 harmful/potentially harmful changes, 922/8268 beneficial/potentially beneficial changes and 6542/8268 opportunities for change where none occurred. Therefore looking at harmful/potentially harmful changes there were 804/8268 (9.7%, 95% CI for SEM 9.1-10.4). Looking at potentially beneficial changes this occurred in 922/8268 (11.2%, 95% CI for SEM 10.5-11.9), and if these were combined with the 'non-significant changes' this gave a proportion of 7464/8268 (90.3%, 95% CI SEM 89.6 to 90.9). Therefore Hypothesis 2 is rejected.

Conclusions:

The results above are encouraging, especially given the stringent definitions of instability used. By making multiple time-period comparisons the validity of the claims of haemodynamic stability are enforced, compared to previous papers. The number of sessions and measurement points combine to add weight to our findings, supported by robust confidence interval data.