Intravenous Steroid Use in the Prevention of Postoperative Cognitive Dysfunction (POCD)

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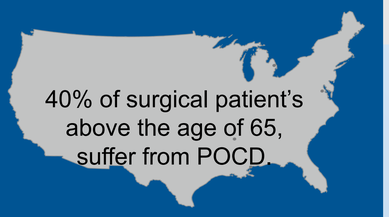
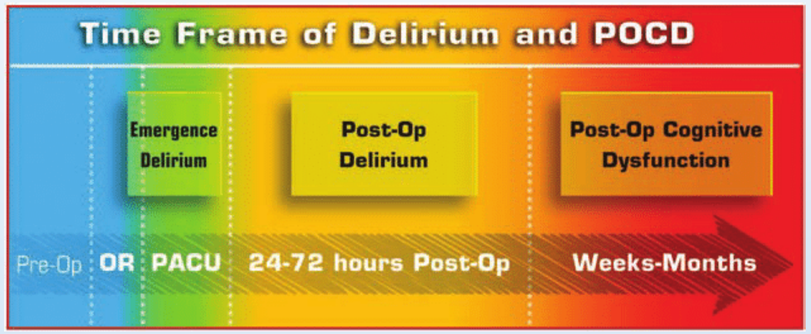


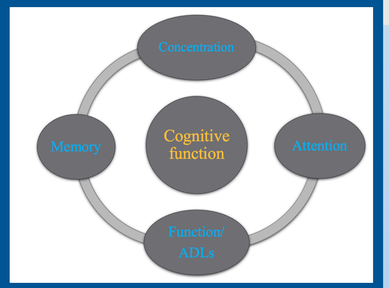
Problem

- Largely an undiagnosed condition in the United States.
- The consequences POCD lead to increased morbidity and mortality, prolonged hospitalization, need for long-term care, loss of functional ability and an increased financial burden.



Literature Review

- The incidence of POCD in patients aged 65 and older ranges from 8.9%- 46.1%
- Surgery results in an inflammatory response to perioperative stress, contributing to POCD via a disruption of the blood-brain barrier (BBB) (Androsova, et.al., 2015).
- Inflammatory cytokines, IL-6, S100B protein, TNF-a, and CRP levels are found to be elevated in patients with POCD after surgery (Lili, et. al., 2013).
- Suppression of the inflammatory response by corticosteroids can help reduce the incidence or severity of POCD
    - Dexamethasone is a potent synthetic glucocorticoid with a long duration.
- Two studies concluded the use of intravenous Dexamethasone had a significant decrease in the development POCD (Glumac et. al., 2017, and Valentin, et. al., 2016).



References available upon request

Methods

- This topic was addressed with student nurse anesthetist at Advent Health University
- An extensive literature review was conducted on current, peer reviewed, evidence based research.
- The Data was compiled into an education presentation, approved by the Institutional Review Board (IRB).
- Informed consent was obtained and a presentation was conveyed to 22 student nurse anesthetists (SRNAs).
- Anonymous pre-test was given before the presentation, followed by an anonymous posttest.
- Statistical analysis was performed by a statistician and acquired results via a paired t-test.

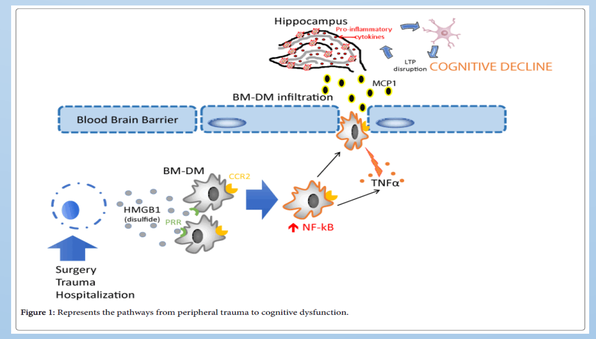


Figure 1: Represents the pathways from peripheral trauma to cognitive dysfunction.

Analysis and Conclusion

- Pre-test: mean score of 43.18%, with a standard deviation of 30.61%, and a standard error mean of 6.53%.
- Posttest: mean score of 89.09%, with a standard deviation of 11.09%, and a standard error mean of 2.36%.
- The mean increase in scores from the pre-test to the post-test was 45.91%. The obtained t-value was -6.300 ($p < 0.001$).
- Limitations included: Small sample size, and short time frame between pre and posttest.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test %	43.1818	22	30.61067	6.52622
	Post-Test %	89.0909	22	11.08800	2.36397

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test % - Post-Test %	-45.90909	34.17867	7.28692	-61.06307	-30.75512	-6.300	21	.000

Findings

- The analyzed results indicated a statistical significance.
- The educational PowerPoint presentation increased the knowledge base of the SRNAs as it pertains to Postoperative Cognitive Dysfunction. This increase in knowledge base should better prepare the SRNAs to be aware of the risk of POCD in patients >65 yrs and optimize the anesthetic plan to implement preventative measures.

Acknowledgements

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