



Audit On: Melatonin Use in Paediatric Patients during Neurophysiological Procedures

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Introduction

After stopping usage of chloral hydrate in sedating patients prior to neurophysiological procedures, we started using Melatonin to induce sleep. It is a pilot study to evaluate its use in both inpatient and outpatient settings, we wanted to identify the best practice regarding its use for this indication; we highlighted its good effectiveness, increase safety profile and palatability. Neurophysiological procedures need to be done while the patient is totally cooperative and quiet. Sleep stage in a valuable part in EEG recordings in the paediatric neurology practice. It is considered an essential part of the study of paediatric patient with seizures and epilepsy. Other neurophysiological procedures as procedures as ABR, VEP are highly sensitive to patient movements which may result in false positive recordings or technically insufficient recordings to be reported; which may result in negative consequences. Many centres used to advise parents to keep their child sleep deprived the day prior to the neuro physiological procedure. It seems to be a reliable way to facilitate normal sleep during neuro physiological procedures. Some parents are not able to comply with the given instructions, they find it very difficult to keep their kid awake for a significant duration one day prior to the procedure. We used Melatonin to promote natural sleep in our paediatric patients prior to performing various neurophysiological procedures, it showed good effect with high safety profile and tolerability

patients undergoing short term neurophysiology procedures in both inpatient and outpatient settings to identify the best practice regarding its use for this indication; we stressed on its effectiveness, safety profile and tolerability. We were keen to investigate why paediatric patients are in need to receive Melatonin prior to short term neurophysiology procedures. We started by reviewing our current practice in using Melatonin, recommended dosage, contraindications and interactions with other medications. We wanted to evaluate how many neurophysiological procedures in paediatric patients needed sedation with Melatonin to be performed, to promote multidisciplinary collaboration in the provision of care and to explore its effectiveness.

A total of 1011 procedures were performed through Jun 2016- Oct 2017 , 372 ABR and 51 994 procedures were successfully performed without the need to use sedation, these paediatric patients slept normally throughout the different procedures. 117 procedures (38 females versus 79 males) required Melatonin [11%]. Patients' ages ranged between 4 months to 13 years .Ratio of female to male was 1:2.1.

EEG was the most commonly performed procedure in

comparison to VEP and ABR. Melatonin was used mainly with patients with chronic neurological disorders who are difficult to settle down, uncooperative, hyperactive. Nine patients were not able to achieve normal sleep after receiving Melatonin dose and were rebooked a second appointment I order to get their study done. It is worth mentioning that sleep EEG was successfully recorded in 90% of our cases without the use of Melatonin. Initial period of initial period of wakefulness was more likely to be recorded followed by sleep onset in this group compared to the sedated group as they were uncooperative during wake state.

The rest of the patient required Melatonin; mainly children with chronic neurological conditions, e.g. CP, ASD and ADHD. Melatonin was highly effective in sleep induction and maintenance in most of the given patients at the standard dose of 1 mg/kg. A second dose (0.5 mg/kg) was necessary in 10% of the patients.

Various Neurophysiological procedures take place in Paediatric Neurology Practice yearly. Most of these procedures can be done without the use of sedation .Melatonin has been generally used to facilitate normal sleep during undergoing EEG . It showed superior results when it comes to safety with comparable efficacy to pentobarbital which made it a safer alternative to pentobarbital for ABR patients . A mixture of Melatonin, Tryptophan and Pyridoxine have been tried to induce spontaneous sleep, it showed to be an effective combination, safe and showed better results than melatonin alone group. Use of Melatonin was well tolerated; no side effects were encountered from its use. Melatonin has no negative effect on EEG quality. Quality of natural sleep EEG recordings is equivalent to those done with Melatonin sedation as wake, transition state and sleep studies are available. We were successful in performing neurophysiological procedures in setting of normal sleep in about 84% of our patients. Melatonin was successful in inducing sleep in 11%. The use of Melatonin is highly effective, safe and well tolerable by pediatric patients doing short neurophysiological procedures.

Keywords: Auditory brainstem response; Attention deficit hyperactivity disorder; Autism spectrum disorder; Cerebral palsy;

