

## Antiepileptic Drug Effects on Thyroid Hormones in Children with Epilepsy

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### DESCRIPTION

Dwajani et al. conducted a pilot study in pediatric patients with epilepsy on 30 subjects. They quantified the effect of antiepileptic drugs (AEDs), Sodium Valproate and Levetiracetam on Thyroid Hormones in patients with epilepsy. They determined that, the effects for AED treatment for 7-12 months had significant alterations in thyroid levels particularly leading to hypothyroidism, when compared to 0-6 months of treatment with AEDs[1].

It is estimated that epileptic patients in India are 5 million whereas in USA are 2 million. Fact that, epilepsy being the second most common neurological disorder imposes economic burden on health care system with both short-and long-term complications in childhood. The parents and societies harbor many concerns for long-term quality of life among children affected. The understanding of neurobehavioral problems in children with epilepsy is important because of early problems in behavior, cognition and academic achievement. The main purpose of therapy is to control firing of neurons, with antiepileptic drugs either as monotherapy or as combination therapy. There are conventional AEDs such as phenytoin, carbamazepine, and valproate (VPA) which are commonly used and newer drugs such as Lamotrigine, Gabapentin, Levetiracetam, and Topiramate which are used as alternative add-on therapy. The long-term treatment with AEDs is associated with increased risk of health issues. There is evidence that therapy with AEDs is associated with changes in homeostasis of thyroid hormones. There are wide number of studies which reported the effect of antiepileptic medications on altered thyroid function. The potential adverse effects of antiepileptic medications on thyroid hormone have been addressed and majority of patients were hypothyroid with 7 to 12 months of treatment with sodium Valproate and Levetiracetam monotherapy when compared to 0 to 6 months of treatment. The published research pertaining to their effects of AEDs and

subsets of other clinical disease condition is limited. It is imperative that a better understanding on the effects of antiepileptic medications on thyroid hormones in pediatric patients can be achieved by a well planned, with strict inclusion and exclusion criteria, larger sample size, comparative and follow up study. An attempt to isolate the individual contribution of AEDs versus other factors are still less common [2,3].

Some study reported significant reductions in free thyroxine (fT4) alone without alteration in free Triiodothyronine (fT3) and thyroid stimulating hormone (TSH) with carbamazepine, phenytoin, phenobarbital, and clonazepam therapy with no alterations in thyroid levels with valproate therapy. While some studies reported that there was a significant increase in TSH with valproate where Levetiracetam had no effects on thyroid hormone levels. A published research study suggested that pediatric patients treated with conventional AEDs have an increased risk of thyroid hormone levels compared to newer AED treatment. In addition, a better understanding of the effects of these AED medications on other areas of functions like related to cognition and age, impact on changes in sleep, weight, bone mineralization and other hormonal functions remain to be clarified. These finding definitely will improve the quality of life of children care with effectively managed epilepsy for long term.

### REFERENCES

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