

# Frequency of Sodium Valproate-Induced Hair Loss and Curly Hair

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## ABSTRACT

Sodium valproate has been widely used by man as an antiepileptic drug. Hair loss and curly hair is a rare side effect of sodium valproate. We have conducted a prospective clinical study in the Department of Neurology in Shafa Hospital, Kerman, Iran for ten years (1994-2004). All 211 epileptic patients in our study were given sodium valproate as a single drug treatment. During the course of therapy, all patients were strictly monitored every 3 months. Six cases (3.5% of valproate user population) of hair loss and curling of hair were found between sodium valproate users. Three cases were female and three were male. This side effect observed at least 3 months after its first initial drug therapy. The estimated frequency of curly hair along with hair loss in our study is lower than previously-reported frequencies (6-12%).

**Keywords:** *Curly hair, Sodium valproate, Epilepsy*

Epilepsy is a common, chronic, and often disabling condition, and effective treatment often requires long-time pharmacotherapy [1, 2]. Sodium valproate is very effective against absence seizures, but it's not the drug of choice. It is preferred in the patient with concomitant generalized tonic-clonic attacks. Valproate is unique in its ability to control certain types of myoclonic seizures; in some cases the effect is very dramatic. The drug is effective in generalized tonic-clonic seizures, especially those that are primarily generalized. A few patients with atonic attacks may also respond, some evidence suggests that the drug is effective in partial seizures [3].

The clinical utility of the drug may be compromised by its adverse effects such as tremor, weight gain, hair loss and gastrointestinal disturbances like nausea, vomiting, abdominal pain and heart burn. But the main highlight to be tackled in this article is hair loss and curly hair as a side effect of sodium valproate [4-19]. Curly hair associated with hair loss is uncommon side effect of sodium valproate. Due to its unusual report, a very few studies have been conducted. However, a review of reports published over 30 years revealed 643 cases that developed valproate-associated hair loss [15]. This study aims to evaluate the frequency of hair loss in epileptic patients using sodium valproate.

## MATERIALS AND METHODS

This is a prospective clinical study on patients who used sodium valproate for 10 years in the Department of Neurology, Shafa Hospital, Kerman, Iran (1994-2004). All the 211 epileptic patients have been taking up sodium valproate as a single agent. During the course of therapy, all patients were strictly monitored every 3 months. Sodium valproate was started at lowest therapeutic dose. The dose was gradually increased to avoid some undesirable adverse effect. Appropriate dose was selected based on the lowest dose disappearing epileptic attack. All patients were examined for hair abnormality and when found, therapeutic plan was changed to another anticonvulsant drug. The term "diffuse hair loss" has been used in patients with more than 40% reduction in scalp hair.

## RESULTS

Among 211 patients who received sodium valproate (enteric coated tablet), 51% were male and 49% were female (no significant difference). Patients' mean age of epilepsy onset was 11 years old and mean age starting to receive sodium valproate was 18 years old. More than 78% of patients had experienced tonic-clonic seizures (primary or secondary). All patients received monotherapy (single drug treatment). Overall, there were 6 cases

(3.5%) of hair loss and curling of hair. Among them 3 cases were female and 3 were male. This side effect could be observed 3 months after first dose of therapy. It took 1-2 years before appearance of hair loss and curly hair in other cases. The original and normal texture of hair appeared after discontinuance of sodium valproate. In six cases of hair loss and curling hair, mean age was 8 years old. The types of epilepsy in 3 out of 6 cases were generalized tonic-clonic and in remaining 3 cases were atypical petit mal seizures.

## DISCUSSION

Curly hair associated with hair loss is uncommon side effect of sodium valproate. Due to its unusual report, a very few studies have been conducted. In 1977, Jeavons and co-workers did a study on a group who used sodium valproate. They observed that 5 out of 295 patients who were using sodium valproate experienced curling of hair [4]. Another incidence of hair loss and curling of hair was reported in a patient who received up to 3 grams sodium valproate daily for 30 months. Nine months after discontinuing the drug, her hair started to revert to its former straight style [8]. In a comparison between sodium valproate and carbamazepine for the treatment of generalized tonic-clonic seizures, Mattson and colleagues found that 12% of patients using valproate had experienced hair loss or change in texture [12]. In a recent study, hair loss has been reported in 7-8% of patients receiving divalproex (a unique combination of equal proportions of sodium valproate and valproic acid, which dissociates in the gastrointestinal tract into the active valproate ion) [18].

Based on our study, 6 out of 211 epileptic patients (3.5%) experienced hair loss and curling of hair. Our results indicate that the mean age of patients with hair loss is lower than those do not show this side effect. The patients also experienced graying and dirty appearance of hair associated with alopecia. Herrans and his co-worker reported discoloration of hair due to sodium valproate therapy [20]. Zinc deficiency was also reported among the patient who received a total dose of 50mg/kg weight daily. Very high dose and long time of sodium valproate could be a causative agent for zinc deficiency. In any case, there is no strong evidence to correlate zinc deficiency and curling of hair to sodium valproate [8]. On the other hand, we should also consider some physiologic factors that affect the patients.

Many drugs can cause hair loss but acquired temporary curly hair due to sodium valproate is a rare finding [14]. Compounds containing thallium, lithium and anti-coagulants can induce hair loss. Some dermatologic disorders such as transient rashes and stomatitis can be observed as well [14]. One case of generalized morphea has also been reported [5].

Kinking of the scalp hair is probably synonymous with the whisker hair that has been reported in some cases [21]. Also, it may be confused with the wooly hair nevus, but acquired progression of kinky scalp hair is clinically different based on its onset in adolescence or

adult life and its progressive extension over period of years [9].

Sodium valproate can be used in the treatment of other neurological disorders rather than epilepsy. It may be administered for patients with bipolar disorders [22]. Most side effects of the drugs have been reported in patients with epilepsy. It would be interesting to compare the side effects of sodium valproate in various disorders. Also, it is interesting to see the effect of the drug on animals. One study has reported sodium valproate-induced hair loss in cats [23].

Based on current study, sodium valproate can cause hair loss and curliness but this is a reversible side effect. The derangement can be observed 3 months after starting dose or later. But in some cases it takes 1 year or 2 years before hair loss and curly hair appears. Younger patient have higher incidence of hair loss and curling. The original and normal texture of hair will appear after discontinuance of sodium valproate.

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