The Experience with the Use of Nandrolone Decanoate and Pyritinol in Children with Cerebral Palsy

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Abstract

Background: Cerebral palsy is a heterogeneous disorder resulting from a non-progressive damage to the developing brain that cause mostly a variable degree of chronic motor disability and developmental abnormalities during early childhood including delayed speech and motor development. Because of the heterogeneous nature of the condition and variable severity and presentations, patients are generally treated with an individualized treatment plans that provides a combination of interventions including treatment of spasticity with muscle relaxants and physical therapy. Patients with severe condition can have significant disability, while patients with less severe disorder experience delay in motor developments and learning difficulties. The aim of this paper is to describe retrospectively our experience with use of nandrolone decanoate (ND) and pyritinol in children with a less severe form of cerebral palsy with aim of improving motor functions and learning abilities.

Patients and Methods: Five patients (3 males and 2 girls) with cerebral palsy presenting mainly with spasticity, hyperreflexia and delayed speech and motor development. The patients were treated with intermittent low dose intra-muscular (i.m) injections of ND (12.5 mg for children under 2 years, 25 mg for the older child) with the aim of improving their delayed motor development. Pyritinol was used in the one patient in addition to ND with aim of improving his learning abilities. Estimation of the bone age was made using radiographs of the left wrist before the injection and 2 weeks after each injection. The patient was monitored weekly for the development of hypertension and sign of virilization. All the patients had normal or delayed bone age before treatment.

Results: The use of nandrolone decanoate intramuscular injections and pyritinol was associated with dramatic effect on the motor development and learning abilities respectively without the occurrence of any adverse effects. Mild advancement of bone age was noticed only in one patient.

Conclusion: nandrolone decanoate and pyritinol can be useful in the management of cerebral palsy.

Keywords: Cerebral palsy, Development, Nandrolone, Pyritinol.
delayed motor development. Three patients aged 14 months (patients 1, 2, and 2), one patient aged 13 months (Patient-4), and one patient aged 9 years. Patients 1 and 2 had poor sucking and feeding during the first week of life and developed physiological jaundice, and the mother of patient 2 had Mother was anemic during pregnancy & received intramuscular iron and antibiotics for gynecological infections.

The patients under two years had delayed language development and were not saying any word with meaning. Three of patients under two years had good fine motor movements as indicated by good pencil grasp and eating biscuit alone. The condition in three patients was related to birth asphyxia, while two patients were considered to have cerebral palsy of undetermined etiology. None of the patients had family history of any neurological disorders. Table 1 summarizes the patients’ characteristics and clinical findings before treatment. The patients were treated with intermittent low dose intra-muscular (i.m) injections of ND (12.5mg for children under 2 years, 25mg for the older child) with the aim of improving their delayed motor development. Pyritinol was used in the older patient (Patient-5) in addition to ND with aim of improving his learning abilities. Estimation of the bone age was made using radiographs of the left wrist before the injection and 2 weeks after each injection. The patient was monitored weekly for the development of hypertension and sign of virilization. All the patients had normal or delayed bone age before treatment. All the patients had normal brain CT-scan. Signed consent was obtained from parents/guardians prior to enrollment and the study was approved by the Scientific Committee of Iraq Headquarter of Copernicus Scientists International Panel.

Results
The use of ND and pyritinol was associated with dramatic effect on the motor development and learning abilities respectively without the occurrence of any adverse effects. Mild advancement of bone age was noticed only in one patient. Table 2 summarizes the treatment of each patient and their effects.

Discussion
The cautious and judicious, but safe use of nandrolone decanoate has recently been reported to have some benefit in the treatment of patients with cerebral palsy, refractory vitamin D-resistant rickets, and achondroplasia. In contrast to 17- testosterone derivatives, nandrolone esters do not cause sodium sulfobromophthalein retention; therefore hepatic complications are infrequent with their use in ordinary doses for short periods. The use of nandrolones has been reported to be associated with beneficial positive effects such as muscle strengthening.
Patient-1

2 i.m injections of nandrolone decanoate (ND) 12.5 mg within an interval of 2 weeks.

Dramatic effect on the motor development without the occurrence of any adverse effects. After 1 week, he was able to sit alone and try to stand. 1 week after the 2nd injection, he was walking holding furniture confidently, and walking 1-2 steps alone. The motor improvement was sustained at 8 weeks after the second injection. Liver enzymes showed no significant change before and 4 weeks after treatment. Neither hypertension nor any sign of virilization has been observed during 4 weeks of weekly follow up. Stimulation of growth was observed. Liver enzymes showed no significant change before and 4 weeks after treatment. Neither hypertension nor any sign of virilization has been observed during 4 weeks of weekly follow up. Stimulation of growth was observed.

Patient-2

Oral baclofen 2.5 mg daily. 3 i.m injections of ND 12.5 mg within an interval of 4 weeks.

After the third ND injection the girl was sitting alone for 15 minutes. After the 2nd ND injection, wrist radiographs showed only 2 bones. Neither hypertension nor any sign of virilization during 6 weeks of weekly follow up.

Patient-3

2 i.m injections of ND 12.5 mg within an interval of 2 weeks.

1 week after the 2nd ND injection, she was sitting alone and had good head control. 2 weeks after treatment bone radiographs showed mild advancement of bone age with presence of 4 bones at the wrist.

Patient-4

1 i.m injections of ND 12.5 mg 2 weeks following ND injection he was sitting indefinitely and stands holding furniture.

Patient-5

Oral pyritinol 100mg once daily during the first week, increased to twice daily from the second week. Three 25 mg i.m injections of ND every 5 days. The mother was instructed to intensify her effort in learning him drawing a circle, square and the alphabetical letters.

After 4 weeks of treatment, he was able to walk for more than 10 minutes without resting & learned to draw a circle, square & the Arabic alphabetical letters.

The intermittent judicious use can help in avoiding the main risk of premature epiphyseal closure and any possible unnecessary virilization. Nandrolone is less virilizing than other anabolic steroids and have been used in women. In contrast to 17-α testosterone derivative, nandrolone esters do not cause sodium sulfobromophthalein retention; therefore hepatic complications are infrequent with their use in ordinary doses for short periods [4, 5]. It has been shown that cerebral blood supply is increased by pyritinol resulting in an improvement of nerve cell metabolism, and it was used with benefit in idiopathic mental retardation [6]. Successful management of difficult neurological disorders demands careful balancing of the possible unwanted side-effects associated with persistent injudicious use as it may be useful to obtain the benefits of such agents through appropriately skilled use.

Conclusion

The use of nandrolone and pyritinol in this study was found to have a beneficial effect on motor development without the occurrence of unwanted effects or advancement of bone age.

References


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