Study of tulobuterol patch in children with asthma

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INTRODUCTION

The prevalence of bronchial asthma has increased continuously worldwide. Many infants and pre school children experience recurrent episodes of bronchial symptoms like wheezing and cough, mainly lower respiratory tract infection, and clinical diagnosis of asthma is usually made with certainty by age 5. Early diagnosis, management of respiratory symptoms are essential. Following are the risk factors for asthma¹:

- Atopic dermatitis
- Pneumonia
- Severe lower respiratory tract infections
- Bronchiolitis
- Inhalant allergen sensitization

Pathophysiology of bronchial asthma is as follows²:

Mechanism of action of TDDS - Tulobuterol produces bronchodilatation by directly stimulating beta -2 receptors in airway smooth muscle, occupation of beta-2 receptors by tulobuterol resulting in activation of Gs-adenyl cyclase cAMP-PKA pathway resulting in phospholyative events leading to bronchial smooth muscle relaxation with rapid decrease in air way resistance.

Pharmacokinetics in children with asthma - when applied as patch in subject weighing less than 30 kgs with 1 mg and those above 30kgs with 2 mg patch ,serum concentration peaked after 12 hours and remained at appropriate levels for 24 hours. PEF significantly improved after application with no side effects , hence suitable for children³.

Dosage for children aged 6 months to 3 years :0.5mg, for children aged 3 to 9 years : 1 mg and for children aged more than 9 years : 2.0 mg⁴

DISCUSSION

In a study on children of age less than 10 years with recurrent cough and wheezing and with children diagnosed as asthma under treatment with ICS and other antiasthmatics were included and treated with tulobuterol patch as additive.
Once daily application of patch showed an add on effect and early recovery and symptom free compared to single medication treatment and with no side effects.

Patients who required dose escalation of ICS were compared by adding tulobuterol patch to ICS in 30 patients of paediatric age group showed combination of ICS plus Tulobuterol, showed significantly greater improvement in PEF values and a significantly respiratory free symptom days. Long term management of asthma in paediatric population can be tried with further studies.

Patients on anti inflammatory drugs such as inhaled steroids need long term management of bronchial asthma. Tulbuterol patch should be applied concomitantly only if no improvement noted with steroids or with inhaled anti asthmatics. Since tulobuterol is not an alternative anti inflammatory patient, guardian is instructed not to discontinue inhaled drugs.

Drug interactions with catecholamines, xanthines, and diuretics may cause arrhythmias and cardiac arrest due to hypokalemia need to taken care. Anaphylactoid symptoms may occur as dyspnea, genrealized flushing, angioedema and urticarial are noted immediate discontinuation and appropriate measures to be taken. Tulobuterol is first bronchodilator drug available as long acting transdermal patch, several clinical trails confirm the efficacy of drug in patients with paediatric asthma. hence first choice in treatment who are unable to inhale drugs reliably in asthmatics.

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