CASE REPORT

CASE OF IATROGENIC CUSHING'S SYNDROME BY TOPICAL TRIAMCINOLONE

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Cushing's syndrome is a collection of signs and symptoms due to hypercortisolism. Prolong use of topical steroid may cause this syndrome and suppression of hypothalamic and pituitary function, however such events are more common with oral and parenteral route. There are very few cases of Cushing's syndrome with a topical application amongst which triamcinolone is the rarest drug. We report a case of 11-year-old boy is presented who developed Cushing's disease by topical application. The child had body rashes for which the caregiver consulted a local quack, a topical cream of triamcinolone was prescribed. After application for three months, the patient became obese and developed a moon-like face. A thorough biochemical workup and diagnostic test for Cushing's disease was done to confirm. The following case report a dramatic example of development of the syndrome from chronic topical application of the least potent corticosteroid

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INTRODUCTION

Cushing's syndrome is a known disease of endocrinology affecting two to three people per million each year with a leading range of 20–50 years of age.[1,2] The syndrome is an excess of cortisol, involving whole body whereas Cushing's disease is because of an ACTH secreting tumour of pituitary which in response increase cortisol secretion from adrenal glands. Amongst all aetiologies of this syndrome, iatrogenic cause is the most common although topical administration of steroids stays as a less common cause.

By World Health Organization (WHO) classification for the potency of topical corticosteroids, clobetasol acetonide 0.1% cream has 'ultra-high' potency graded as class 1 whereas triamcinolone cream has 'moderate' potency graded in class.[3] In 2010, a study presented a data of 35 years, stating only 22 iatrogenic Cushing's syndrome cases in paediatric age group consuming topical Clobetasol.[4]

We present a case of Cushing's syndrome by topical application of 0.1% triamcinolone cream, a corticosteroid with much lesser potency than clobetasol.

CASE REPORT

A case of 11-months old obese [Body mass index >40] male child with normal perinatal history and slow developmental milestones presented in walk-in paediatric clinic. The patient presented with 27 kilograms in weight [>95th percentile], 68 cm [<5th percentile], 47 cm head circumference [75th percentile] with chief complaints of loss of appetite, lethargic, decreased responses and a typical moon-faced appearance with excessive weight gain in past 3 months.

On examination the patient had fever, shallow breathing [24 breaths/min], tachycardia, 105/74 mmhg of blood pressure in supine position [Systole, 99th percentile. Diastole, >99th percentile]. There was a generalized oedema, protuberant abdomen with centrally placed umbilicus and pale skin with few rashes on dorsum of the body.

The caregiver told that the child had skin rashes throughout his body almost 3 months back. For which he used a triamcinolone topical cream, prescribed by a quack. The cream was applied on the whole body which decreased the intensity of skin rashes and a marked reduction of irritability due it.

A thorough work up was done for the child that showed neutrophilia and raised TLC (total leukocyte count), deranged liver function tests (SGPT – 1235, SGOT – 818), hypernatremia with hypocalcaemia, the serum glucose was 150 mg%, although renal function tests were normal. A dexamethasone test was negative although serum cortisol levels were 41.90 mcg/dl [Normal: 20–70 mcg/dl]. An overall picture of metabolic alkalosis was present. On imaging, ascites and hepatomegaly was found. The patient was advised to stop using the cream and dermatology opinion was pursued. Diagnosis of seborrheic dermatitis was made and the new treatment plan was advised. Selenium sulphide 2.5% with ketoconazole gel and ciclopriox was given and a regular follow-up was advised. The patient was followed up for two weeks for next three months. The symptoms were alleviated in next two months

after the first visit. It was reported that patient became normal once the topically applying agent prescribed by quack was stopped and the patient regained normal body habitus of the age.

During the administration of the topical agent, no other drug was consumed which pointed to the possibility of this rare side effect by topical administration. The relevance of the alleviating of symptoms assured that it was due to the corticosteroid that was used in first place. This topical agent can also lead to the Cushing's syndrome which is a known side effect of enteral and parenteral corticosteroids.

Figure-1: Typical moon-faced appearance of an 11-months old obese patient can be seen in the image.

Table-1: Serum electrolytes investigation of the patient after the condition was developed

Serum Electrolyte	Normal range	Patient serum report
Na+	135–145 mEq/L	148 mEq/L
K+	3.5–5mEq/L	2.7 mEq/L
Ca+ (Ionized)	1.15–1.32 mEq/L	1.02 mEq/L
HCO3	22–30 mEq/L	38 mEq/L
Cl	97–110 mEq/L	89 mEq/L
Calcium (Total)	8–10 mg/dl	5 mg/dl

Table-2: Differential and total leukocyte counts of the patient

Leukocyte	Normal DLC	Patient's DLC	Normal TLC	Patient's TLC
Neutrophil	40–60%	63.7%	2.5–7.5×10^9/L	6.8×10^9/L
Lymphocyte	20–40%	29%	1.5–3.5×10^9/L	2.2×10^9/L
Monocyte	2–8%	5%	0.2–0.8×10^9/L	0.6×10^9/L
Eosinophil	1–4%	2%	0.04–0.4×10^9/L	0.2×10^9/L
Basophil	0.5–1%	0.3%	0.01–0.1×10^9/L	0.08×10^9/L

DISCUSSION

Cushing's syndrome involves whole body with typical truncal obesity, moon shaped facies, buffalo hump and rapid weight gain. These are few of the most common presentations. The patient usually becomes hypertensive due to Na+ accumulation promoting hypervolemia. Our case suffered from Cushing's syndrome due to negligence of the caregivers, the child was treated with a medication prescribed by quack without any follow up. Due to less potency of this drug, it is possible that the prescriber can overlook the side effects but follow up was necessary to see any adverse effects pertaining to the medication. Typically, the hypothalamus-pituitary-adrenal axis shuts down relying upon exogenous steroids with hypoplasia of adrenal glands. The iatrogenic Cushing's syndrome is the leading cause but by topical route is very rare.

Topical steroid creams are divided into seven classes from 1 being super potent and 7 least potent. Topical Triamcinolone acetonide is mid strength class 4 potency steroid. Percutaneous steroids are absorbed through epidermis and dermis and into the circulation and only 2% of applied steroid is absorbed in systemic circulation after application for more than one day.[5] The topical steroid is used mostly for skin allergies and rash and are frequently used by quakes in Pakistan. The reported cases of topical steroid usage leading to Cushing's syndrome are for some reasons more frequent in younger patient. Younger patients have more surface area to volume ratio and are less able to metabolize the drug. Other factors that might play a role are concentration and potency of topical drug, frequency of application, vehicle of drug, duration of application and coexistent renal or hepatic disease.[6] Thus, the harmful effects of topically applied steroids are more pronounced in children. The side effects include organ atrophy, perioral dermatitis, delayed wound healing and infections. It is always important to know that usage of corticosteroids amongst the infants in the paediatric age group should be with special caution as many times systemic involvement can be fatal.[7]

The time of development of Cushing's syndrome also varies individually studied the effect of application of topical steroid on four children; three of them developed Cushing's disease in 1–4 months period. The fourth child presented with failure to thrive after seven months of treatment, during a febrile illness he had convulsion followed by hypotension which responded to parenteral corticosteroid. The study showed that adrenal suppression seemed to be related to steroid dose and duration.[8]

Theoretically, adverse outcomes of topical steroid therapy are a rare entity. The reason many of the dermatological side effects are not documented. A similar case reported of Cushing's syndrome in a 9-month-old girl as a result of prolonged topical use of clobetasol propionate. This brings us to our concern that skin effects are seen irrespective of class of corticosteroid. If these side effects have yet not been documented does not exclude these possibilities. It is probably that the application of these medications by this mode is not much common or the paediatric age lacks such possibilities.[9]

It has been suggested that Children who develop immunosuppression due to chronic steroid use are at increased risk of developing opportunistic bacterial and fungal infection.[10] Patients of paediatric age can even develop serious life-threatening infection and thus need to be monitored thoroughly.

CONCLUSION

Excessive use of topical steroid can lead to various side effects including Cushing's syndrome. Therefore, limiting the use of topical drug, using less potent and low dose of drug may prevent such dangerous side effects. Caregiver must do follow-up even for topical and low drugs especially for infant patients. Alternatively, physician must consider excessive use of topical steroid when an infant present with Cushing's syndrome.

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