

# Paradoxical use of oral and topical steroids in steroid-phobic patients resorting to traditional Chinese medicines

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**Background:** Childhood-onset eczema is a common condition associated with pruritus, sleep disturbance and disrupted quality of life. The mainstay of treatment is usage of emollients and topical corticosteroid (CS). Nevertheless, many steroid-phobic parents are very skeptical about western medicine that may contain CS. Furthermore, complementary and alternative medicine (CAM) is popular among Chinese patients in Asia and many citizens idolize CAM and believe that traditional Chinese medicine and herbs are without any side effects. Pressed by public's quest for efficacious and safe treatment, and lucrative profits, CAM practitioners may take the risks of prescribing steroids and "western medicine" in the name of traditional Chinese herbal medicine.

**Methods:** We report a series of illustrative cases of uninformed systemic and topical corticosteroid usage for eczema by steroid-phobic parents to alert the public of this risk. The drugs were detected by high-performance liquid chromatography with diode-array detection, liquid chromatography-tandem mass spectrometry, gas chromatography mass spectrometry, or liquid chromatography ion trap time-of-flight mass spectrometry.

**Results:** Five cases of uninformed corticosteroid usage for moderate-to-severe eczema by steroid-phobic parents were reported.

**Conclusions:** The physician caring for children with skin disease should also be aware that even steroid-phobic parents might indeed be using potent CS without awareness. The patient usually suffers chronic relapsing

eczema of moderate-to-severe degree. The steroid-phobic parent is usually non-compliant in following advice on usage of emollient, topical CS, and avoidance of triggers in accordance with western doctors. The CAM practitioner, when confronted by an anxious steroid-phobic parent who demands efficacious topical and/or systemic treatment, may knowingly or unknowingly be forced into prescribing potent albeit illegal products containing corticosteroids in the name of traditional Chinese herbal medicine.

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**Key words:** corticosteroids;  
proprietary Chinese medicine;  
steroid phobia

## Introduction

Childhood-onset eczema is a very common condition associated with pruritus, sleep disturbance and disrupted quality of life.<sup>[1]</sup> The mainstay of treatment is usage of emollients (maintenance) and topical corticosteroid (CS) (during disease exacerbation).<sup>[1]</sup> Nevertheless, management of this disease may be largely suboptimal for a number of reasons. Many steroid-phobic parents are very skeptical about western medicine.<sup>[2-4]</sup> Furthermore, complementary and alternative medicine (CAM) is popular among Chinese patients in Asia.<sup>[5,6]</sup> Many citizens idolize CAM and believe that traditional Chinese medicine (TCM) and herbs are without any side effects.<sup>[2,5]</sup> Many parents would purchase proprietary topical and oral preparations without knowing what they are, and use them liberally on their children.<sup>[2,5,7,8]</sup> Pressed by public's quest for efficacious and safe treatment, and lucrative profits, CAM practitioners may take the risks of prescribing corticosteroids and "western medicine" in the name of traditional Chinese herbal medicine (TCHM). Hence, despite the prevalence of "steroidophobia" which may lead to the suboptimal use of prescribed topical CS in children with eczema and dermatological disorders, parents might unknowingly be using over-the-counter potent CS.<sup>[2,9]</sup> We report a series of illustrative cases of

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uninformed corticosteroid usage for eczema by steroid-phobic parents.

### Illustrative cases

**Case 1.** An 8-year-old girl presented with poorly-controlled eczema and Cushingoid facial features. The mother admitted that she was concerned about steroid usage from "western" doctors and had been consulting a Chinese medicine (CM) practitioner who prescribed 4 types of pills taken three times per day (approximately 30 tablets in total each time) presumably containing ingredients of Chinese herbal medicine for 2 months. Her eczema improved. The mother noted that her appetite became good and she had gained weight. Her face was round and there was some over-growth of hair and striae. Her skin had become thinner. Symptoms of polyuria and nocturia were also elicited. The mother became concerned following recent announcement by the Department of Health that the medicines prescribed by that CM practitioner to another eczema patient contained betamethasone. On examination, the child appeared Cushingoid with striae, hirsutism and thin skin. Her blood pressure was 98/67 mmHg. Fasting blood glucose was 4.2 mmol/L, and 24-hour urine cortisol was 1.0 nmol (reference range: 24-140 nmol/day). A low-dose short synacthen test (LDSST) confirmed adrenal suppression (cortisol levels 14, 89 and 101 nmol/L at 0, 20 and 30 minutes, respectively; cortisol response  $\geq 600$  nmol/L indicates intact hypothalamus-pituitary-adrenal axis). She was then treated with hydrocortisone 5 mg twice daily (10 mg/m<sup>2</sup> per day).

The drugs were analyzed by high-performance liquid chromatography with diode-array detection (HPLC-DAD) and liquid chromatography-tandem mass spectrometry (LC-MS/MS) (Fig. 1a). The black pills contained unidentified substances. The green pills contained paracetamol, chlorpheniramine and herbal markers. The orange pills contained betamethasone and chlorpheniramine. The green capsules contained benign herbal markers. Chlorpheniramine and sophora alkaloid (matrine) were detected in the child's urine sample. The case was followed by the statutory regulatory body.

**Case 2.** The father of a 9-year-old girl with eczema purchased capsules from a traditional Chinese medicine (TCM) practitioner in Shanghai and used them for 5 months (Fig. 1b).<sup>[3]</sup> Reportedly, the TCM practitioner claimed that the capsules contained special herbs. The father also noted that the girl's eczema promptly improved with the medications but flared up again if they were discontinued, and his daughter had become fatter. In the past, the father had also tried

topical and oral TCM. They practiced multiple food avoidance/restriction despite the fact that previous skin prick testing at 6 years of age showed dust mite and crab sensitization but negative reaction to the other common food items. The child had previously been seen by various pediatricians and dermatologists, but the father eventually decided not to use any 'western' medications and sought TCM treatment instead. When analyzed with LC-MS/MS and gas chromatography mass spectrometry (GC-MS), various 'western' medications along with TCM were identified, including betamethasone, paracetamol, caffeine, chlorpheniramine, chloramphenicol, frusemide, and glycyrrhetic acid. As the capsule is adulterated with corticosteroid and western medications, the case was reported to the Department of Health for further investigations. The father was informed of these findings and was advised not to use the capsules any more.

**Case 3.** A 21-month-old girl with eczema since 1 month of age was referred for eczema and food allergy. The child had been seen by pediatrician, dermatologist and CM practitioner. The mother reported that she had been concerned about skin darkening associated with topical corticosteroid usage. Instead, she was taking TCM pills, and using creams and lotion every second day (Fig. 1c). The mother noted that the TCM medications were very efficacious in controlling eczema. The child's eczema was moderate but there was no apparent Cushingoid feature. CS adulteration was suspected. The cream and lotion were analyzed by HPLC-DAD, GC-MS, LC-MS/MS and LC-IT-TOF/MS. In the cream, fluocinonide, clobetasol propionate, ketoconazole, methyl salicylate, borneol, methol, and eugenol were identified. In the lotion, berberine, palmatine, borneol, and camphor were isolated. As



**Fig. 1.** Proprietary Chinese medicine capsules, pills, tablets (a and b); cream and lotion (c and d) adulterated with corticosteroids and western medicines.

the cream was adulterated with corticosteroids and ketoconazole, the case was reported to the Department of Health for follow up.

**Case 4.** A 14-year-old boy with severe eczema since 1 month of age and recent cataract surgery was referred. The child had seen various dermatologists in the past, and received short courses of oral corticosteroid for exacerbations. The mother was concerned about steroid usage and subsequently took the child to see three different CM practitioners in the past 2 years. She reported that the boy was using topical Chinese herbal medicine and taking 1 bottle of herbal medicine three times per day for more than one year. He was found to have cataract in his left eye by a private ophthalmologist 7 months following usage of these medications, which required cataract surgery. The boy had a history of allergic rhinitis and asthma, and both parents had allergic rhinitis. Apart from severe eczema and heavy *S. aureus* colonization, there was no Cushingoid feature. His medications were analyzed by HPLC-DAD and LC-MS/MS. A dark brown pill contained berberine, wogonin, palmatine and forsythine, whereas the cream contained dexamethasone, dexamethasone acetate, and methyl salicylate. Three specimens of herbs and herbal formulae contained various herbs. The case was reported to the Department of Health.

**Case 5.** A 2-year-old boy was referred with severe eczema since 3 months of age. He had been treated with topical and oral corticosteroid for eczema exacerbations in the past. The child was taking herbal tea from time to time. The mother subsequently used two similar over-the-counter creams instead. The child had severe eczema but his growth was normal, and there was no Cushingoid feature. Skin swab grew *S. aureus*, and his eczema was treated with a course of systemic antibiotics. The creams had similar herbal logos and appeared remarkably similar (Fig. 1d). They were analyzed by HPLC-DAD, LC-MS/MS, and LC-MS-IT-TOF. One cream contained triamcinolone acetonide, terbinafine, miconazole, methol and eugenol. The other cream contained methyl salicylate and chlorhexidine.

## Discussion

Childhood-onset eczema is an exceedingly common chronic relapsing disease.<sup>[1]</sup> It was estimated that about 15% of children suffer from this disease.<sup>[10,11]</sup> There are two important facets to its management, namely, preventive and therapeutic measures. Preventive measures refer to the proper and frequent skin lubrication (emollient) by topical application of moisturizers and bathing. When these preventive measures fail to control disease

exacerbation, therapeutic measures such as topical/systemic corticosteroids, antibiotics and various immunomodulating agents may be required to control skin inflammation. A mild-to-moderately potent CS is the first line treatment medication. The use of CS, topical or systemic, for atopic and allergic diseases such as eczema and asthma is legitimate and efficacious.<sup>[1]</sup> Nevertheless, the physician must inform the parents of its usage, and formally document this in the patient's record. The patient must be monitored for potential adverse effects. Steroidophobia is prevalent among parents which may lead to the suboptimal use of topical CS in children with dermatological disorders.<sup>[2]</sup> In childhood eczema, steroidophobia is prevalent regardless of the severity of the disease.<sup>[2]</sup> Furthermore, many parents would wait until eczema had worsened or apply CS only as a last resort to avoid potential side effects. "Fears" were predominantly interpersonal and rarely iatrogenic in nature. Skin problems (in particular skin thinning) and adverse effects on growth are the side effects of CS of most concern to these parents. Despite westernization and modernization, myths and fallacies about eczema management proliferate extensively in the city of Hong Kong. Like many atopic/allergic problems, there is no immediate cure. However, most parents expect their child's eczema to be cured with treatment without any side effects. Parallel to the fear of corticosteroid usage, CAM and TCHM are well accepted and demanded by parents.<sup>[5,6]</sup> Nevertheless, the literature on the efficacy of traditional CM for eczema is conflicting.<sup>[12]</sup> In a Cochrane review, Zhang et al<sup>[13]</sup> commented that Chinese herbal mixtures may be effective in the treatment of atopic eczema. However, only four small poorly reported RCTs of the same product, Zemaphyte, were found and the results were heterogeneous. They concluded that further well-designed, larger scale trials are required. A later review made similar comments that only a few RCTs demonstrated the efficacy (or lack of efficacy) of Chinese medicinal herbs in treating atopic eczema and further larger scale trials are warranted.<sup>[12]</sup>

The first case illustrates that prolonged un-disclosed systemic corticosteroid usage results in adrenal suppression which requires CS replacement and careful endocrinology follow-up. The second case illustrates that steroid-phobic parents may take extra-efforts to pursue presumed TCHM out-of-town.<sup>[3]</sup> It is remarkable to note that the pills and capsules do not look any different from those of western medicine, but the parents would simply take the word of the TCM practitioners that the capsules do not contain western medications. Physicians must routinely interrogate about this possibility in any patient with chronic atopic diseases. Although stringent regulations are in force in Hong Kong concerning the sale of herbal and proprietary Chinese medicine

(PCM), many parents would acquire these products in the Mainland of China or overseas and use them for prolonged periods.

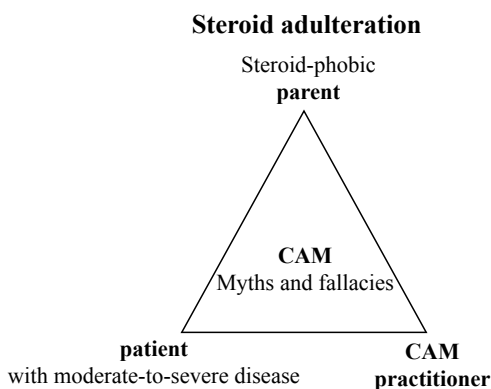
Chinese herbal remedies may be toxic and many contain corticosteroids.<sup>[9,14-17]</sup> Indeed, adulteration of herbs and presumed natural products has been repeatedly reported in different countries around the world.<sup>[9,17-21]</sup> We previously also reported the presence of potent CS in a very popular and inexpensive cream easily purchasable in the mainland of China. Many parents and patients would purchase this topical medication when they are visiting in the mainland of China, and use it for mild skin ailments without consulting any doctors.<sup>[8]</sup> The exact prevalence and trends of inappropriate usage of over-the-counter steroidal preparations by parents of children with various skin disorders in Hong Kong are unknown.<sup>[2]</sup> The extent of the problem with PCM usage in children has also remained largely unexplored. Paradoxically, even steroidophobic parents might indeed be using potent CS without awareness.<sup>[3,8]</sup>

We hypothesize that steroid adulteration or abuse in CAM practice occurs in the following setting in childhood-onset eczema (Fig. 2). The triad of "p"s involves the patient, the parent, and the practitioner. The patient usually suffers chronic relapsing eczema of moderate-to-severe degree. The steroid phobic parent is usually non-compliant in following advice on usage of emollient, topical CS, and avoidance of triggers in accordance with western doctors, and obtains advice and recommendations from relatives and friends about CAM. In recent years, middle-class parents looking for higher end TCHM products seem to be the trend.<sup>[6]</sup> Doctors in their busy practice might not be spending sufficient time to explain the principles and safety profiles associated with the proper usage of prescribed corticosteroids, leading to parents seeking various over-

the-counter and potentially inappropriate therapies including very potent corticosteroids. Many parents are probably quite ignorant on what steroids are, and anxiety about their side effects is often not allayed.<sup>[22]</sup> Aubert-Wastiaux et al<sup>[23]</sup> analyzed 208 questionnaires and concluded that topical corticosteroid phobia is a complex phenomenon, common among French patients with atopic dermatitis that has an important impact on treatment compliance. Based on their observations, we speculate that conflicting advice from health professionals, a perception that everything that is TCM or natural is harmless, a failure of communication of positive health messages about topical corticosteroids by health care practitioners are possible causes of steroidphobia in Hong Kong. The CAM practitioner, when confronted with an anxious steroidophobic parent who demands efficacious topical and/or systemic treatment, may knowingly or un-knowingly be forced into prescribing potent albeit illegal steroidal products in the name of traditional Chinese herbal medicine.<sup>[12]</sup>

These cases represent only the tip of the iceberg about CAM myths and abuse in Hong Kong. Asthma represents another common childhood allergic disorder that CS abuse may potentially occur.<sup>[6]</sup> A number of children admitted with life-threatening asthma to the pediatric ICU are indeed due to non-compliance to prophylactic inhaled CS. Some of these patients had been treated with CAM despite ongoing symptoms.<sup>[24]</sup>

As a class of anti-inflammatory agents, corticosteroids are widely prescribed for many inflammatory and allergic conditions. Physicians have a role to play in public and media education in order to achieve better therapeutic and compliance outcomes for children with atopic diseases, especially those which are steroid responsive. Traditional Chinese medicine practitioners also have a role to uphold the high standards of their profession by distancing themselves from those who tamper with TCM.



**Fig. 2.** Hypothesis: Triad of p's leading to steroid adulteration/abuse in childhood-onset eczema by steroid-phobic parents. The 'p's stand for parent, patient and practitioner.

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**Ethical approval:** This study was approved by local ethics committee for this retrospective review.

**Competing interest:** Authors have been involved in herbal medicine research.

**Contributors:** Hon KL is the principal author, Leung TF is the pediatric allergist, Yau HC is the pediatric endocrinologist, and Chan T is the toxicologist involved in the management of these patients.

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