Press Release

Hong Kong Academy of Medicine

Understanding Steroids:
Appropriate usage under close monitoring is beneficial

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Steroid, by suppressing inflammatory response, is a valuable medicine. In some diseases, such as rheumatological and respiratory disorders, steroids still remain the mainstay of treatment. However, steroid phobia, the excessive fear of using steroid, is common in Hong Kong. Misunderstandings about how steroids work exist, resulting in under-utilization by patients even when they are clinically indicated. Reliable scientific and clinical information is available to reassure patients that appropriate usage of steroids are relatively safe under close monitoring by physicians. Patients are encouraged to relay their concerns to their physicians so that correct advice can be offered in a timely manner.

Steroids – Proper usage can be invaluable in treating many diseases

There are different forms of steroid treatment, which include oral drugs, topical agents, injectables, inhaling agents *etc*. Steroids, when used inappropriately or excessively, could result in complications, such as: growth suppression, increased susceptibility to infections and bone demineralization. However, when used with compliance to clinical guidelines and under close monitoring by doctors, steroids are relatively safe and can be very useful and practical in treating many disease conditions.

Steroids, due to their immuno-suppressive and anti-inflammatory actions, have wide clinical applications." **Dr. Chan Chung Yuk Alvin, representative from the Hong Kong College of Family Physicians,** stated, "Family doctors, as first point of contact in the healthcare system, often face clinical conditions which require steroid treatment. These include asthma, allergic rhinitis, and eczema *etc.* However when patients heard of steroids, they are worried and they may refuse treatment. On the other hand,

non-compliance to steroid treatment is not uncommon[1]. This behaviour could result in sub-optimal treatment and unsatisfactory control of the clinical conditions." In such, guidance and education to patients regarding the safety, potency and appropriate use of steroids are required.

Steroid phobia is common among paediatrics patients and their families

Prof. Leung Ting Fan, representative from the Hong Kong College of Paediatricians, commented, "Steroid phobia is very common among parents of local paediatric patients. However, fallacy and misled information may be disadvantageous to the disease management in paediatrics[2]." Among children, asthma is the most common chronic diseases which require topical steroids to control disease severity. Asthma is defined as the presence of variable airflow obstruction due to bronchspasm and inflammation, which has clinical features such as recurrent cough, breathlessness, chest tightness and wheezing.

Although non-steroidal treatments are available, on the basis of efficacy, clinical studies supported that inhaled steroids are the most useful controller therapy for school-age children with asthma. Inhaled steroids are very effective in suppressing airway inflammation[3].

Prof. Leung continued, "Parents are concerned with side effects such as growth suppression, weakened immunity, hypertension and osteoporosis, and thus under-utilization or stop their children from using steroidal treatment. This practice may lead to a viscous cycle in which more intense airway inflammation requires a more prolonged course of anti-asthma treatment, along with increased dosage or even treatment with more potent steroid. In fact, the above worrying side effects of steroids are evident mainly in patients taking long-term systemic (oral or injection) steroids. With inhaled steroid treatment, this drug can be directly delivered to the lower airway while minimising its exposure to other organs."

Prof. Leung quoted, "According to clinical studies, inhaled steroids were shown to slow down growth velocity in children. This resulted in a linear, but NOT cumulative[4], growth reduction of 0.5 to 3.0 cm (~ 1 cm on average) during the first few years of

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1 Charman, CR. *et al.* Br J Derm (2000) **142:** 931.
2 Hon, KL. *et al.* Acta Paediatrica (2006) **95:** 1451.
3 Chauhan, BF. And Ducharme, FM. Cochrane Database Syste Rev (2012) **16:** 5.
4 Kelly, HW. *et al.* N Engl J Med (2012) **367:** 904.

therapy[5,6]. However, published evidence suggests that the usefulness of inhaled steroids in controlling asthma in school-age children with persistent disease would outweigh the risk associated with a small change in subjects' final height. The evidence for asthma management in preschool children is different from school-age children and adolescents in several ways[7]. In preschool children, inhaled steroid was found to be useful in controlling asthma symptoms and preventing acute attacks but did not result in any sustained benefit in modifying the natural history of asthma[8]. Thus, paediatricians need to balance the benefits of inhaled steroid against its potential side effects when we consider whether to start inhaled steroids in young children with asthma."

Misuse and misconception is common in dermatological use of steroids. Strict compliance to regimen is encouraged to avoid associated side effects

Dr. Ho King Man, representative from Hong Kong College of Physicians (Dermatology & Venereology) explained, "There is a common misconception that steroid is antibiotics[2] as the Chinese translation of antibiotics also has the same anti-inflammatory connotation. Although the use of topical steroids reduces epidermal inflammation, it is important to understand that steroids do not possess any intrinsic antimicrobial properties." Contrarily, it will aggravate any co-existing infection. Due to its low cost, convenience and immediate relief on symptoms, misuse of topical steroids is common.

In dermatology, steroids are commonly used as a topical cream or ointment in eczema and psorasis. Topical treatments are the first line of defense to control skin lesions. In mild cases of eczema and psoriasis flares, physicians will generally prescribe non-steroidal treatment. However, if no improvements on conditions can be observed, topical steroids will be recommended.

It is advised that patients should comply strictly to the regimen: once daily or twice-daily depending on the type of steroids. Clinical study suggested that there is no evidence of skin atrophy after 20 weeks of treatment with a once daily potent topical steroid preparation[9]. However, more frequent usage than **recommended** may indeed cause local side effects, such as skin thinning, acne and proneness to infections

[5] Pauwels, RA. *et al.* Lancet (2003) **361:** 1071.
[6] Sharek, PJ. And Bergman, DA. Pediatrics (2000) **106:** e8.
[7] Bacharier, LB. and Guilbert, TW. J Allergy Clin Immunol (2012) **130:** 287.
[8] Guilbert, TW. *et al.* N Eng J Med (2006) **354:**1985.
[9] Van Der Meer, J. *et al.* Br J Dermatol (1999) **140:** 1115.

and significant systemic absorption. Therefore, patients should not adjust the dosage without prior consultation from their physicians.

Long term steroid usage might be required in rheumatology – adherence to guidelines on prevention of steroid-induced osteoporosis is recommended and sudden withdrawal will lead to adverse effects

Despite advances in immunosuppressive drugs and development of novel drugs such as biologics, steroids remain the cornerstone of treatment of inflammatory rheumatic diseases, such as systemic lupus erythematosus (SLE). In rheumatology, several routes of administration are used for specific diseases and indications, ranging from systemic oral, intramuscular and intravenous steroid to local injections.

SLE is an autoimmune inflammatory disease where patients can suffer from serious multi-organ complications. For instance, lupus nephritis (LN), a renal disease, is the major cause of morbidity and mortality in SLE patients[10]. **Dr. Mok Chi Chiu, representative from Hong Kong College of Physicians (Rheumatologist),** said, "Due to its fast-acting effects and its high response rate, GC treatment is the first line therapy for SLE patients."

Dr. Mok continued, "In most cases for out-patients, SLE patients are required to revisit the doctor within weeks, to monitor the disease activity in response to steroid treatment as well as the associated side-effects[11]. Steroid doses are cumulative and can have adverse effects. The effects of steroids on bone mass can occur very early after treatment initiation. Adequate calcium and vitamin D supplements might be administered to patients with SLE undergoing GC treatment to prevent the risk of osteoporotic fractures."

Steroids must be gradually reduced to permit the adrenal glands to resume natural cortisol production. **Dr. Mok** commented, "Eliminating doses too quickly can result in adrenal crisis or even rebound effect. Therefore, patients should adhere to doctor's guidance."

Conclusions and Suggestions

To conclude, steroids remain the mainstay of treatment in a number of diseases despite the advances in numerous novel therapeutic approaches. Decision to use

[10] Mok, CC. *et al.* Am J Kidney Dis (1999) **34:** 315.
[11] Mosca, M. *et al.* Ann Rheum Dis (2010) **69:** 1269.

steroids in given patient is individualized. Potential side effects of long term steroid use may include: weight gain, skin thinning, muscle weakness, moon face, reduced growth in children, increased risk of infection and weakening of the bones. Therefore, a rule of thumb: minimum dose should be used for the shortest time.

Dr. Chan suggested, "Patients are encouraged to discuss with their doctors on therapeutic options. It is relatively safe to use steroids under close monitoring by doctors. Hence, following doctor's guidance is the key to recovery."

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Supplementary information

1)Two main groups of steroids include glucocorticoids (GCs), which are essential to carbohydrate, fat and protein metabolism, and to the body's response to stress; and mineralocorticoids, which control balance of water and salt in the body.

2)In terms of systemic usage in rheumatic diseases, the standardized nomenclature of GC dosing is as follows[12]:

- Low dose: <7.5 mg prednisone equivalent a day
- Medium dose: 7.5 - 30 mg prednisone equivalent a day
- High dose: 30 - 100 mg prednisone equivalent a day
- Very high dose: >100 mg prednisone equivalent a day
- Pulse therapy: >250 mg prednisone equivalent a day for one or a few days

3)Eczema is a common disease characterized by chronic fluctuating skin eruption, reduced skin hydration and transepidermal water loss. Due to the fact that one of the symptoms of eczema is dry skin and dry skin is a very common condition, proper diagnosis is the key to management of this disease without leading to skin exacerbation. Likewise, psoriasis is a chronic, autoimmune disease of the skin, where the immune system mistakes the skin cells as a pathogen and sends out faulty signals that speed up the growth cycle of skin cells. Similar to eczema, accurate diagnosis is important as treatment options are based on the type of psoriasis, location and its severity.

[12] Handa, R. JAPI (2012) **60:** 41.