CLINICAL REPORT

Corticosteroid Phobia Among Pharmacists Regarding Atopic Dermatitis in Children: A National French Survey

Delphine RAFFIN[1,2]*, Bruno GIRAUDEAU[1,3], Mahtab SAMIMI[1,2,4], Laurent MACHET[1,2,5], Xavier POURRAT[1,6] and Annabel MARUANI[1,2,5]
[1]*University François Rabelais,* [2]*Department of Dermatology,* [3]*Clinical Investigation Center- INSERM 1415,* [4]*ISP 1282, UMR INRA,* [5]*Inserm U930,* [6]*Department of Pharmaceutics, CHRU Tours, Tours, France*

Fear of corticosteroid use among patients and parents of children with atopic dermatitis (AD) may be increased by professional caregiver's mistrust to corticosteroids and a lack of consistency in information provision. This study used a French national survey to assess mistrust among pharmacists of the use of topical steroids for treatment of AD in children. From all pharmacies in France, a random sample of 500 (approximately 2%) was selected to receive a postal survey comprising a standardized questionnaire of 50 items exploring trust, knowledge, beliefs and practices related to the use of topical steroids for children with AD. The main outcome was self-assessment of pharmacists' confidence in topical steroids on a 0–10 visual analogue scale. The mean confidence was 4.46 (95% confidence interval 4.11–4.82). This study highlights that pharmacists have only moderate confidence in topical steroids. This lack of trust may have a high impact on maintaining fear of corticosteroids in parents and patients. ***Key words: phobia; steroids; topical; atopic dermatitis; children*****.**

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Annabel Maruani, Department of Dermatology, CHRU Tours – Hospital Trousseau, Avenue de la République, FR-37044, Tours Cedex 9, Tours, France. E-mail: annabel.maruani@univ-tours.fr

Atopic dermatitis (AD) is a chronic inflammatory skin condition that frequently occurs in toddlers and children and may persist into adulthood (1). AD affects 10–20% of children worldwide and is a public health concern because of its prevalence, cost and impact on quality of life of children and their parents (2, 3). The main treatment for childhood AD is topical steroids, together with moisturizers (4, 5). The efficacy of topical steroids is directly linked to therapeutic adherence, a specific problem with topical drug treatments in dermatology (6, 7). Good adherence requires effort, time, and trust in the efficacy and safety of drugs. This last point is of particular interest for patients and parents (8). Lack of information on topical drugs is a factor in poor adherence in children with AD (7, 9).

The term "corticosteroid phobia" has been used to describe a fear of corticosteroids and is a common pitfall in the management of chronic inflammatory skin diseases, especially AD. The impact of topical corticosteroid (TCS) phobia on therapeutic adherence in AD has been analysed in several studies, and its frequency ranges from 38.3% to 80.7% among patients or parents of children with AD (7, 8, 10–12).

In addition to the often poor reputation of corticosteroids among lay-persons, the impact of caregivers' communication is crucial as to whether patients' develop TCS phobia or not (8, 10). The caregivers involved include physicians (general practitioners, dermatologists, paediatricians) as well as pharmacists who deliver drugs and counselling. Caregivers' mistrust in TCS and lack of consistency in information provision among different caregivers enhance TCS phobia among patients and parents. By informing and advising parents and patients when delivering treatments, pharmacists play an important role in the management of AD in children, especially regarding adherence. Despite the crucial role of pharmacists in counselling patients, the degree of TCS mistrust among pharmacists has not previously been studied.

The aim of this study was to assess TCS mistrust related to AD in children, using a national survey of pharmacists in France.

METHODS

Study design and population

The study consisted of a survey structured as a questionnaire sent to pharmacists in France. Among all pharmacies in France, estimated to be 22,446 on 1 May 2014, we selected a random sample of 500, using a hierarchical 2-step scheme (13). The 95 French "counties" and the 45 districts of the 3 major cities (Paris, Marseille Lyon) were considered separately. Among the 95 counties, 20 were selected at random, and among the 45 districts, 20 were selected at random. Within each selected county, 20 pharmacies were selected at random, and within each selected district, 5 pharmacies were selected.

Questionnaire development and distribution

The questionnaire was constructed in 3 steps using focus groups (12, 14). First, 15 expert dermatologists, methodologists and pharmacists created the questionnaire, which was further de-

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veloped by interviewing parents of children with AD. Then, to ensure its relevance, the questionnaire was tested with 10 pharmacists who were not included in the study. Three of the authors (DR, BG, AM) finalized the questionnaire.

The questionnaire included 50 items and asked for data concerning the responder's profile, respecting anonymity: age, sex, job in the pharmacy (pharmacist, technician, student), and year of graduation. The first item regarding TCS mistrust was a self-assessment, on a 0–10 visual analogue scale (VAS), of confidence in the delivery of topical steroids for children with AD. The following items explored different areas of TCS mistrust, with direct and indirect questions, inviting simple or multiple choices, formulated in a positive or negative way, to avoid suggesting answers. The areas explored were: knowledge and beliefs regarding: (*i*) the efficacy of topical steroids in children AD; (*ii*) the safety of topical steroids; and (*iii*) the modalities of applying topical steroids; (*iv*) professional practices regarding delivering the physician's prescription of topical steroids; and (*v*) professional practices regarding counselling about topical steroids. Distinctions were made between children under 2 years of age and children aged 2–18 years. The last question concerned pharmacists' interest in continuing education about AD in children. With the addresses of pharmacies, we distinguished pharmacists in urban areas from those in rural areas according to the definition of the French National Institute of Statistics and Economic Studies (INSEE) (15).

The questionnaire was sent by post with a short letter of explanation and a stamped return envelope. The first questionnaire was sent in May 2014, and a second was sent in June 2014 to non-responders. The end of data collection was 1 September 2014.

Outcomes and statistical analysis

The main outcome was the self-assessment of pharmacists' confidence in topical steroids for AD in children, on a 0–10 VAS, expressed as mean and 95% confidence interval (95% CI). Subgroups were defined by the pharmacist characteristics of sex, age (under and over 40 years of age), rural or urban localization, and year of graduation (before or after 2005, the date of the French consensus conference on AD (4)).

Secondary outcomes were answers to specific items of the questionnaire evaluating different features of TCS mistrust.

Descriptive statistics were estimated. Subgroup comparisons were made using the Student's *t*-test. Analyses were performed with R v2.12.2 (R Development Core Team, Vienna, Austria).

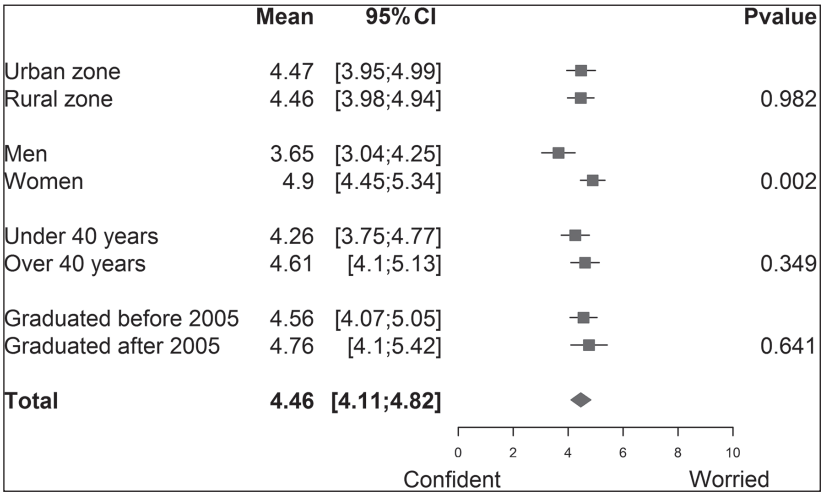

Fig. 1. Forest plot of mistrust of topical steroids for treatment of atopic dermatitis in children according to pharmacists' characteristics.

RESULTS

Among 500 pharmacies that were sent the questionnaire, 195 (39%) replies were received. No questionnaires were returned due to being incorrectly addressed. The total response rate to the items was 96.2%.

Among 195 responders, 176 were pharmacists (90%), 10 were pharmacy technicians (5%), 5 were students in pharmacy (3%) and 4 did not answer this item. Overall, 121 were female (62%). The median year of graduation was 1997 (range 1972–2014); 96 pharmacies (49%) were located in urban areas.

Main outcome

The mean confidence in topical steroids for children with AD was 4.46 (95% CI 4.11–4.82) on the 10-point VAS. Confidence in topical steroids was comparable for rural and urban pharmacists, pharmacists under and over 40 years, and pharmacists who graduated before and after 2005, but male pharmacists were significantly more confident in topical steroids than female pharmacists (4.90, 95% CI 4.45–5.3 vs. 3.65, 95% CI 3.04–4.25, $p = 0.002$) (Fig. 1).

Secondary outcomes

Regarding knowledge and beliefs in the efficacy of topical steroids for children with AD (Fig. S1[1]) among pharmacists, 27.7% answered that topical steroids should be restricted to severe outbreaks of AD and 17.6% and 48.9% mentioned that they could also be used in mild and moderate outbreaks, respectively. Regarding data on the safety of topical steroids (Fig. S1[1]), 24.5% of pharmacists answered that topical steroids were more dangerous than oral steroids for children under 2 years of age and 20.6% for children from 2 to 18 years old; 65.1% answered that topical steroids should be totally avoided in newborns. For 79.5% of pharmacists, moisturizers were a better treatment than steroids in mild and moderate outbreaks of AD in children, considering the benefit/risk ratio. Regarding knowledge and beliefs about the application of topical steroids (Fig. S1[1]), 62.9% of pharmacists considered that topical steroids should be applied for <5 days for each outbreak of AD; 82.9% considered that topical steroids should be totally avoided on the face, 82.3% on the hands and 14.4% on the bottoms of children.

Regarding the professional practices of pharmacists in delivering physicians' prescriptions (Fig. S2[1]), 52.8% stated that they occasionally or often adjusted the prescription by decreasing the duration of topical steroids and 16.1% by

increasing it. For practices in primary counselling in children with AD (Fig. 2), 84.3% of pharmacists provided advice to parents to spread the cream well to limit the amount applied; 25.4% advised waiting as long as possible before applying topical steroids, and 93.1% sometimes/often or systematically informed parents of the potential side-effects of topical steroids in children.

Finally, 86% of responders stated that they were interested in continuing education about AD in children.

DISCUSSION

This study is the first to evaluate TCS-mistrust among pharmacists for children with AD. It highlights distrust in the use of topical steroids among pharmacists, particularly for children younger than 2 years.

The first publication raising the concept of corticosteroid phobia was published in 1979 by Tuft (16), and concerned unfounded or exaggerated fears among physicians about the use of steroids in asthma. As in our study, fears focused on lack of safety rather than on a potential inefficiency of the treatment. Previous studies of AD revealed a frequency of TCS phobia in parents and patients of up to 80.7% (12, 17). TCS phobia might be conveyed by physicians. In the study of Smith et al. (18), 25% of parents of children with AD reported that they had been alerted by their general practitioners that topical steroids were dangerous. Although corticosteroid phobia seems to be universal, discrepancies are observed between countries: the French level of TCS phobia seems to be higher than in the UK or China (8, 10). However, there is a lack of comparative studies between countries to affirm this.

Corticosteroid phobia is a complex and multifaceted phenomena that includes beliefs, fears and behavioural components. One crucial point is the fear of potential side-effects of steroids. The feared side-effects, according to our study, were mostly cutaneous, especially risk of infections and skin fragility, and systemic effects, especially weight gain and growth retardation. This finding is in agreement with the results of other studies showing the same fears, which highlight a confusion between the side-effects of oral and topical steroids (8, 10, 12, 18). In our study, more than 20% of pharmacists considered that topical steroids were more dangerous than oral steroids. Female pharmacists were more mistrustful of topical steroids than were male pharmacists. This finding is consistent with a Japanese study of factors associated with steroid phobia in parents (11). It is not known whether this could be linked to more global anxiety among the female population or to a projection of female pharmacists onto their own children.

TCS phobia among parents whose children have AD has a negative impact on treatment adherence (10, 19, 20). Pharmacists have a special role in medication adherence in general, especially in the management of patients with AD, as the first and last provider (21). AD is the second most common dermatological condition for which advice was sought by patients in the UK from their pharmacists (22). In our study, more than two-thirds of pharmacists stated that they often or systematically advised patients or parents about topical steroids (quantity to use, method of application, duration) and hygiene care. Also, more than 60% of pharmacists declared that they often or always informed patients about potential side-effects of corticosteroids. Surprisingly, our

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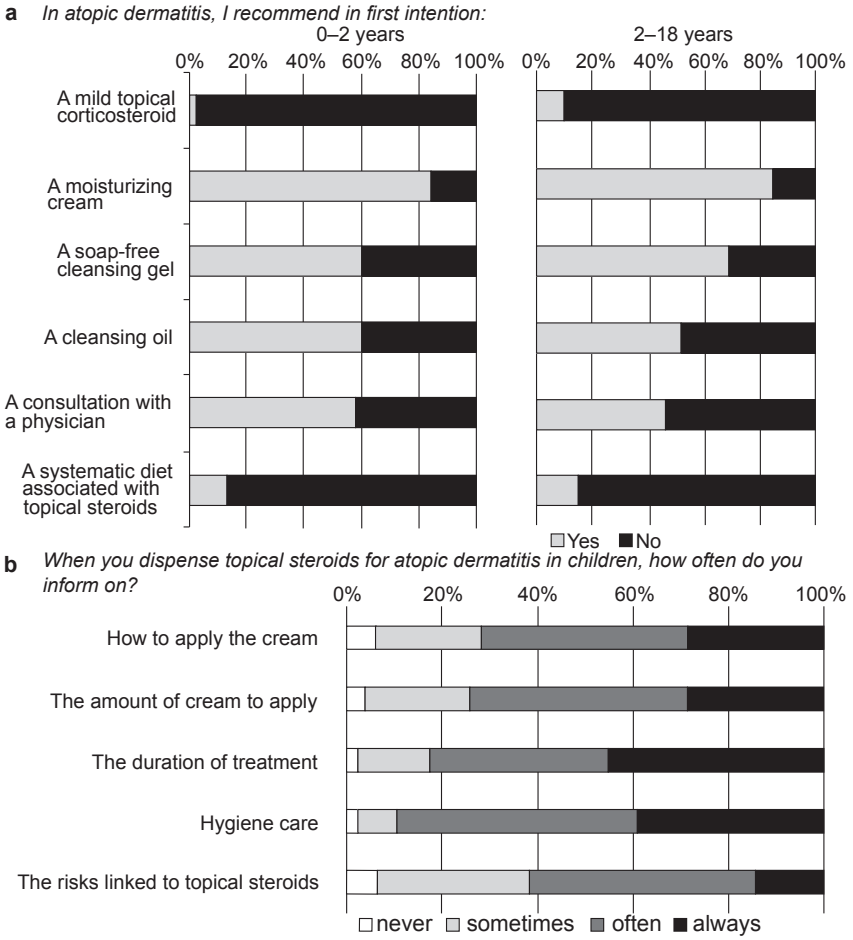

Fig. 2. Practice regarding primary counselling about topical steroids: (a) products and behaviours; and (b) oral information.

study found that the information given by pharmacists to patients about their prescriptions did not match French guidelines for children with AD (4). However, no differences were found in TCS mistrust between pharmacists who graduated before and after 2005, the date of the French consensus conference on AD (4). More than half of pharmacists admitted that they sometimes adjusted physicians' prescriptions of topical steroids by reducing the amount or the duration specified. These contradictory instructions from pharmacists and physicians probably contribute to TCS phobia in patients and parents. Improving pharmacists' knowledge about topical steroids and childhood AD, and bringing pharmacists into a closer contact with physicians, in order to increase homogeneity in practice might help to limit TCS mistrust. In a recent UK study, 64.8% of pharmacists had had some form of education in dermatology, which was considered beneficial in treating or advising patients with skin problems (21).

This study has some limitations. First, the response rate was only 39%. Secondly, the study was based on statements from pharmacists and not on an objective assessment of their practices. Thirdly, the survey focused on French pharmacies, with their unique legislation and own operating mode, and therefore the findings cannot be unconditionally generalized to other countries. In particular, pharmacists in France are allowed to deliver mild hydrocortisone cream, but no other TCS without a doctor's prescription. Finally, we did not compare TCS mistrust in children with AD with that for other topical treatments, which would be interesting in order to gauge confidence in topical steroids compared with other drugs.

In conclusion, there is a low level of confidence in the use of topical steroids among French pharmacists. It is notable that more than half of pharmacists occasionally or often reduced the doctor-recommended dosage. Because pharmacists are at the forefront of care in delivering drugs, their TCS mistrust probably has a high impact on maintaining fear among parents of children with AD. To improve adherence with treatment, continued education of pharmacists about the use of topical steroids in children with AD is proposed.

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The authors declare no conflicts of interest.

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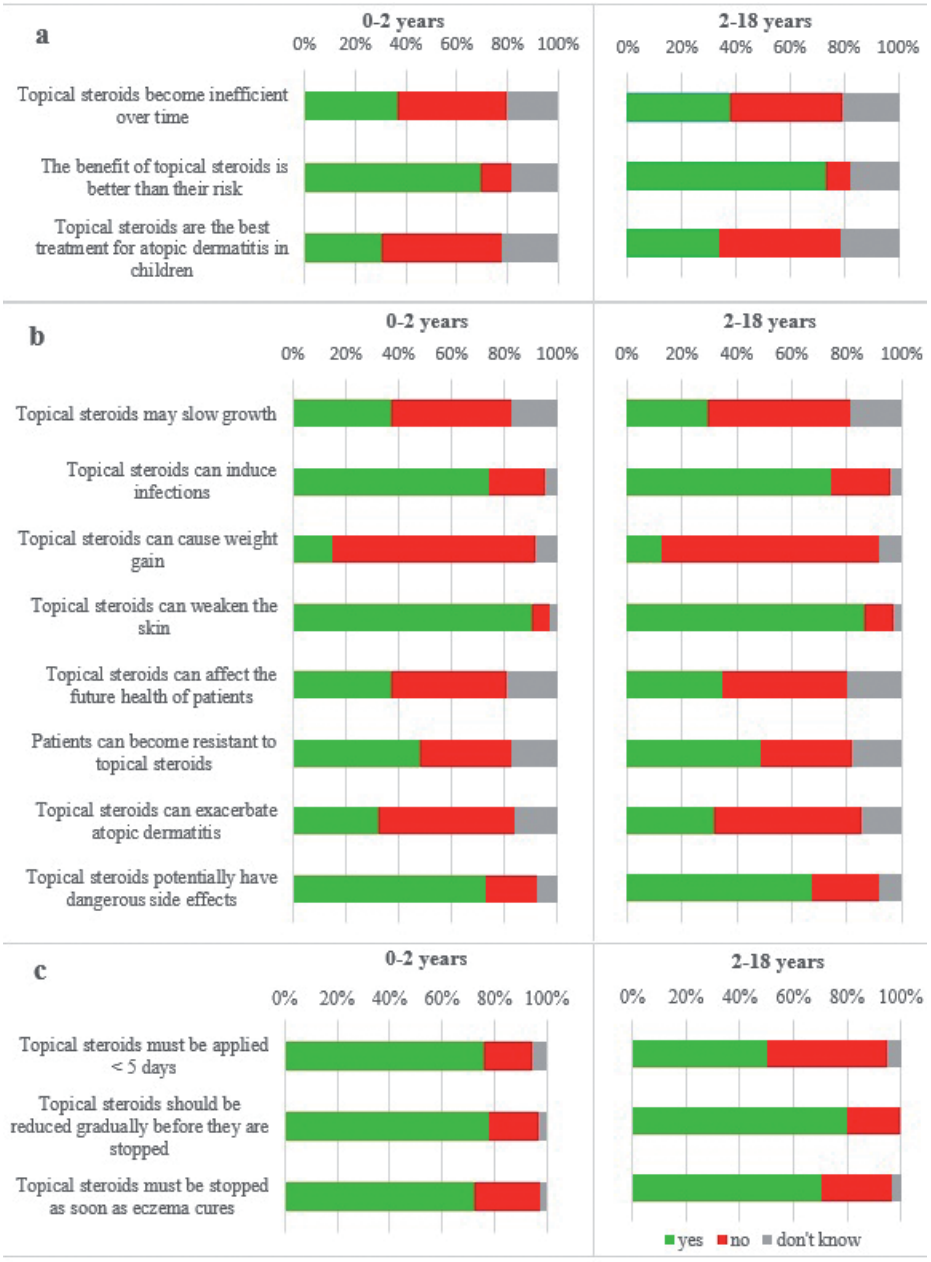

Fig. S1. Knowledge and beliefs regarding: (a) efficacy; (b) safety; (c) modes of application of topical steroids for children with atopic dermatitis who are < 2 and 2–8 years old.

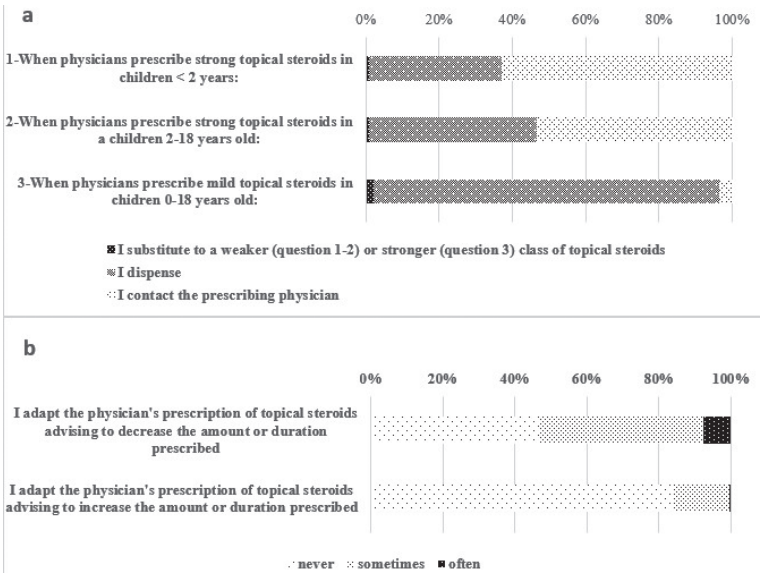

Fig. S2. Practices regarding delivery of the physician's prescription for topical steroids: (a) dispensing the prescription; and (b) adjusting the prescription.