

Comparison of FEDESI and SCORFAD scoring systems for the evaluation of skin lesions in allergic cats

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Background – Feline Dermatitis Extent and Severity Index (FeDESI) and Scoring Feline Allergic Dermatitis (SCORFAD) are two different scoring systems for the evaluation of feline allergic dermatitis.

Objectives – To evaluate the correlation between FeDESI and SCORFAD and pruritus.

Animals and methods – The dermatological lesions of 32 cats affected by feline allergic dermatitis were evaluated with both FeDESI and SCORFAD before treatment and once monthly during treatment where ciclosporin was administered at 7 mg/kg orally once daily for 1 month then tapered, when possible, in the subsequent 2 months. Pruritus was scored by pet owners with a Visual Analog Scale (VAS). Correlation between scores at Visit 1, and between absolute and percentage score improvements at visits 1, 2 and 3, were analysed statistically using a nonparametric Spearman's rank correlation test.

Results – Correlation between FeDESI, SCORFAD and VAS pruritus scores at baseline was low and nonsignificant for all combinations. The correlation of absolute score improvement was moderate and significant only between FeDESI and VAS pruritus at Visit 3. Correlation of improvement percentage was moderate and significant between FeDESI and SCORFAD and between FeDESI and VAS pruritus at Visit 2, whereas at visits 3 and 4 it was high and significant for each combination.

Conclusion – Only improvement percentage of FeDESI and SCORFAD scores seem to correlate well. SCORFAD is the only scoring system to have been validated, although it seems to correlate less with pruritus and may be more difficult to use than FeDESI. The latter could thus be more appropriate for use, but further studies are needed especially in regard to its validation.

Introduction

Feline allergic dermatitis is a common disease with clinical manifestations of self-induced alopecia, miliary dermatitis, head and neck pruritus, and eosinophilic granuloma complex.¹ In clinical studies evaluating therapeutic interventions for feline allergic dermatitis it is necessary to assess the severity of clinical lesions before and after treatment.

Two different methods to evaluate skin lesions associated with feline allergic dermatitis have been

proposed.^{2–5} The "Feline Dermatitis Extent and Severity Index" (FeDESI) is similar to the "Canine Atopic Dermatitis Extent and Severity Index" (CADESI)⁶ and evaluates the severity of erythema, excoriations/erosions and self-induced alopecia at 42 body sites with a 0–5 point scale (maximum score 630).^{2,3} This scoring system was proposed for the assessment of lesions of different feline dermatological conditions² and used for a clinical study in cats with presumed allergic dermatitis.³ It was considered to have a good intra- and interobserver reliability across different presentations of feline allergic dermatitis, and good sensitivity to changes due to therapeutic interventions.^{2,3} However, to the best of the authors' knowledge, validation of this scoring method has never been published.

The second evaluation method is the "Scoring Feline Allergic Dermatitis" (SCORFAD), specifically developed to assess the particular skin lesions associated with allergic dermatitis in cats.⁴ This system evaluates the severity and extent of four lesions (excoriations, eosinophilic plaque, miliary dermatitis and self-induced alopecia) and the number of body regions involved by means of detailed descriptors. For each lesion a 0–4 score is assigned leading to a maximum of 16 points. SCORFAD has been validated for content, construct, criteria and sensitivity to change.⁴

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Table 1. Mean values ($\pm$ standard deviation) for FeDESI, SCORFAD and VAS-pruritus in 32 cats treated with 7 mg/kg ciclosporin at baseline (Visit 1) and after 1, 2 and 3 months of treatment (visits 2, 3 and 4, respectively)

<i>n</i> = 32 cats	Visit 1	Visit 2	Visit 3	Visit 4
FeDESI	28.94 $\pm$ 24.08	11.31 $\pm$ 12.45	5.16 $\pm$ 6.90	2.66 $\pm$ 0
SCORFAD	5.66 $\pm$ 2.29	3.03 $\pm$ 1.77	2.16 $\pm$ 1.74	0.97 $\pm$ 1.38
VAS-pruritus	7.0 $\pm$ 1.8	3.5 $\pm$ 0.2	2.2 $\pm$ 0.1	1.9 $\pm$ 0.1

For both scoring systems, criterion validity was not assessed against other established lesion evaluation measures. Criterion validity has never been assessed for FeDESI, whereas for SCORFAD it was evaluated by treating cats and determining correlation of SCORFAD with a global assessment of overall clinical improvement based on a 0–4 scale, as determined by investigators and pet owners. A direct comparison of SCORFAD and FeDESI has never been carried out and could thus be of interest for clinical investigators. In the experience of the authors, FeDESI is easier to use as a result of its similarity to the canine CADESI scale. It would thus be interesting to know if it correlates with the less intuitive but validated SCORFAD method, in light of its possible use and/or validation in future studies.

We present here an evaluation of the relationship between SCORFAD and FeDESI scores, with regard to pruritus in cats with allergic dermatitis before, during and after a therapeutic intervention.

Materials and methods

Animals were included in a multicentre open study evaluating the impact of ciclosporin on quality of life of allergic cats and their owners. Cats over 6 months of age and weighing over 2.3 kg, diagnosed with allergic dermatitis following the standard procedures, and fulfilling Favrot's feline allergy diagnostic criteria, were included in the study.⁷ Cats were not included if ectoparasites, bacterial or fungal infections, neoplastic or viral diseases, flea allergy or other nonallergic diseases were diagnosed. Ruling out food allergy was not mandatory. Ciclosporin was administered at a starting dose of 7 mg/kg per os every 24 h for 1 month. If the animal improved, the frequency of administration was then tapered to every other day after the first month and to twice weekly after the second month, according to a predetermined criterion.⁵ Ciclosporin was administered for 3 months and there were four monthly visits for each cat. At each time point the investigators assessed the clinical lesions using the FeDESI (range 0–630)^{2,3} and the SCORFAD (range 0–16).⁴ The owners evaluated pruritus at each visit, starting at the inclusion visit, with a 10 cm long Visual Analog Scale (VAS) without any descriptors, as validated for dogs.⁸

Due to the nonparametric distribution of data, the correlation between FeDESI, SCORFAD and VAS pruritus scores at baseline was calculated with Spearman's rank correlation test. The score improvement for each cat from baseline at each time point was calculated for FeDESI, SCORFAD and VAS pruritus by subtracting the post-treatment score from the baseline. Correlations of score improvements at each time point for FeDESI, SCORFAD and VAS pruritus were calculated by Spearman's rank correlation test. The percentage of improvement between baseline and each subsequent time point was calculated for FeDESI, SCORFAD and pruritus. Correlations of percentage improvements for each cat at each time point for FeDESI, SCORFAD and VAS pruritus were calculated by Spearman's rank correlation test. For cases withdrawn due to lack of efficacy, the imputation rule for missing data was the Last Value Carry Forward (LVCF). All analyses were performed using SAS, version 9.2 (SAS Institute Inc., Cary, NC, USA). A value of $P < 0.05$ was considered statistically significant.

Results

Thirty-two cats were included from nine different veterinary clinics. One animal was lost to follow-up after Visit 3 and its values were carried forward to Visit 4. The median age was 6.6 yr (range 11 months to 13 yr), median weight was 4.8 kg (range 3.4–7.0 kg). There were 20 spayed females and 12 castrated males. There were 30 European short hair, one Siamese-cross and a Siberian cat included in the study.

Mean FeDESI, SCORFAD and VAS pruritus scores at each time point are reported in Table 1. The correlation between FeDESI, SCORFAD and VAS pruritus scores at baseline was low and nonsignificant for all combinations (Table 2).

Correlations between FeDESI, SCORFAD and VAS pruritus score improvement between baseline and the other time points are presented in Table 3. The score improvement correlation was moderate and significant only for FeDESI and VAS pruritus at Visit 3.

Correlations between FeDESI, SCORFAD and VAS pruritus percentage improvement from baseline to each time point are presented in Table 4. At Visit 2 the percentage improvement correlation was moderate and significant between FeDESI and SCORFAD and between FeDESI and VAS pruritus, whereas it was low and nonsignificant between SCORFAD and VAS pruritus. Correlations were high and significant for each combination at visits 3 and 4.

Discussion

To the best of the authors' knowledge, this is the first time that two scoring systems for feline allergic

Table 2. Correlation between FeDESI, SCORFAD and VAS pruritus scores at baseline (Visit 1)

	Visit 1	
	<i>r</i>	<i>P</i>
FeDESI–SCORFAD	0.24	0.19
FeDESI–VAS pruritus	0.29	0.11
SCORFAD–VAS pruritus	0.01	0.97

r, correlation coefficient; *P*, significance.

Table 3. Correlations of score differences between baseline and visits 2, 3 and 4 for FeDESI, SCORFAD and VAS pruritus

	Visit 2		Visit 3		Visit 4	
	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>
FeDESI–SCORFAD	0.21	0.25	0.31	0.08	0.20	0.28
FeDESI–VAS pruritus	0.33	0.07	0.50	0.004*	0.30	0.10
SCORFAD–VAS pruritus	0.05	0.79	0.34	0.05	0.25	0.16

r, correlation coefficient; *P*, significance.

*Significant correlation ($P < 0.05$).

Table 4. Correlations of percentage improvements between baseline and visits 2, 3 and 4 for FeDESI, SCORFAD and VAS pruritus scores

	Visit 2		Visit 3		Visit 4	
	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>
FeDESI–SCORFAD	0.49	0.004*	0.84	<0.0001*	0.92	<0.0001*
FeDESI–VAS pruritus	0.45	0.009*	0.66	<0.0001*	0.79	<0.0001*
SCORFAD–VAS pruritus	0.26	0.15	0.63	<0.0001*	0.81	<0.0001*

r, correlation coefficient; *P*, significance.

*Significant correlation ($P < 0.05$).

dermatitis have been compared with each other. When considering the absolute scoring values, the correlation between the two scoring systems was low and not significant. Similar results were obtained in a study comparing three scoring systems for the assessment of atopic dermatitis severity in human beings.⁹ It is possible that with a better distribution of values or a larger number of animals this correlation might have been higher and/or significant. In particular, a high standard deviation was observed, particularly in the FeDESI scores. The lack of significant correlation could also be determined by the intrinsic differences between the scoring systems, which measure slightly different types of lesions, a different number and extension of affected body areas and use different scoring systems and ranges.^{2–4} In particular, SCORFAD evaluates mild dermatitis, a lesion specific to feline allergic dermatitis, but not erosion, which is included in FeDESI. Furthermore, the distribution of body areas (42 in FeDESI and 10 in SCORFAD) is not proportional between the two methods. This leads to an uneven distribution of scores between the two methods, increasing the severity and standard deviation in FeDESI. The intrinsic differences in the scoring systems may also have influenced the correlations between absolute score improvements, which are also low and nonsignificant with the exception of FeDESI with VAS pruritus at Visit 3. This hypothesis is supported by the fact that when considering the percentage improvement, which eliminates scoring system differences, all correlations appeared high and significant, particularly at visits 3 and 4.

Both FeDESI and SCORFAD were described to correlate with pruritus in previous reports.^{3,4} We could not replicate these results, as for both FeDESI and SCORFAD the correlation with VAS pruritus was poor and nonsignificant. The reasons for such results are unknown and could depend on the small number of cats examined. When considering the correlation between improvement of lesional scores and that of pruritus, only FeDESI seemed to offer a moderate and significant correlation, albeit only at Visit 3, after 2 months of treatment, possibly due to a more detailed recording of lesions than was the case for SCORFAD. Similarly, the percentage improvement of FeDESI scores correlated well and significantly with pruritus at all time points, whereas SCORFAD values did not (at Visit 2) or correlated to a lesser extent (at visits 3 and 4). Interestingly FeDESI and pruritus were reported to be highly correlated at every time point in a previous study,³ whereas the relationship between SCORFAD and pruritus was defined as weak.⁴

In the opinion of the nine veterinarians involved in this study, SCORFAD was more difficult to complete (personal communication), as it implied understanding

and following precise descriptors of type, number and extension of lesions, whereas FEDESI was more intuitive and familiar due to its similarity to CADESI, even if it took more time to complete. The need of more rapid evaluation methods for skin lesions in dogs has led to the development of two simplified scoring systems called Canine Atopic Dermatitis Lesion Index (CADLI)¹⁰ and CADESI-04.¹¹ A rapid, reliable and intuitive scoring system for feline lesions would also be greatly appreciated.

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Résumé

Contexte – Le FeDESI (Feline Dermatitis Extent and Severity Index) et le SCORFAD (Scoring Feline Allergic Dermatitis) sont deux différents systèmes de notation pour l'évaluation de la dermatite allergique féline.

Objectifs – Evaluer la corrélation entre FeDESI, SCORFAD et le prurit.

Sujets et méthodes – Les lésions dermatologiques de 32 chats atteints de dermatite allergique féline ont été évaluées par FeDESI et SCORFAD avant traitement et une fois par mois au cours du traitement à la ciclosporine administrée à 7 mg/kg per os une fois par jour pendant 1 mois puis diminuée, lorsque possible, au cours des deux mois suivants. Le prurit a été noté par les propriétaires des chats à l'aide d'une échelle visuelle analogue (VAS). Les corrélations entre les scores à la visite 1 et entre l'amélioration des scores absolus et des pourcentages aux visites 1, 2 et 3, ont été analysées statistiquement à l'aide d'un test de corrélation de rang de Spearman non paramétrique.

Résultats – La corrélation entre FeDESI, SCORFAD et le score de prurit au départ était faible et non-significatif pour toutes les combinaisons. La corrélation du score absolu d'amélioration était modéré et significatif seulement entre FeDESI et le VAS de prurit à la visite 3. La corrélation du pourcentage d'amélioration était modéré et significatif entre FeDESI et SCORFAD et entre FeDESI et le VAS de prurit à la visite 2, tandis que, aux visites 3 et 4 il était plus élevé et significatif pour chaque combinaison.

Conclusion – Seuls les scores de pourcentage d'amélioration de FeDESI et le SCORFAD semblent bien corrélés. Le SCORFAD est le seul système de notation à avoir été validé bien qu'il semble moins corrélé avec le prurit et pourrait être plus difficile à utiliser que FeDESI. Ce dernier pourrait ainsi être plus approprié à l'usage mais des études supplémentaires sont nécessaires, en particulier pour sa validation.

Resumen

Introducción – el índice de extensión y severidad de la dermatitis felina (FeDESI) y la evaluación de la dermatitis alérgica felina (SCORFAD) son dos sistemas diferentes de evaluación de la dermatitis alérgica felina.

Hipótesis/Objetivos – evaluar la correlación entre FeDESI y SCORFAD y el prurito

Animales y métodos – las lesiones dermatológicas de 32 gatos afectados por dermatitis alérgica felina se evaluaron mediante ambos FeDESI y SCORFAD antes del tratamiento y una vez al mes durante el tratamiento cuando se administró ciclosporina a una dosis de 7 mg/kg por vía oral una vez al día durante un mes y después en disminución progresiva, cuando fue posible, en los dos meses siguientes. El prurito se evaluó por los propietarios con una escala visual análoga (VAS). La correlación entre los valores en la visita 1, y entre los valores absolutos y porcentuales de mejora en las visitas 1, 2 y 3 se analizaron estadísticamente utilizando una prueba de correlación de rangos no paramétrica de Spearman.

Resultados – la correlación entre los valores FEDOSI, SCORFAD y los valores de prurito con VAS fue baja y no significativa para todas la combinaciones. La correlación entre valor de mejora absoluta fue moderada y significativa sólo entre FEDOSI y el prurito valorado con VAS en la visita 3. La correlación del porcentaje de mejora fue moderado y significativo entre FeDESI y SCORFAD y entre FeDESI y el valor de prurito con VAS en la visita 2, mientras que en las visitas 3 y 4 fue alta y significativa en todas la combinaciones.

Conclusiones e importancia clínica – tan sólo los porcentajes de mejora de FeDESI y SCORFAD parecen correlacionarse bien. SCORFAD es el único sistema de evaluación que ha sido validado, aunque parece correlacionarse menos con el prurito y puede ser más difícil utilizar que FeDESI. Este último puede ser por ello más apropiado para su uso, aunque se necesitan más estudios, especialmente en lo que respecta a su validación.

Zusammenfassung

Hintergrund – Der Feline Dermatitis Extent and Severity Index (FeDESI) und der Scoring Feline Allergic Dermatitis (SCORFAD) sind zwei unterschiedliche Bewertungssysteme zur Evaluierung der feline allergischen Dermatitis.

Ziele – Eine Evaluierung der Korrelation zwischen FeDESI und SCORFAD und dem Juckreiz.

Tiere und Methoden – Die Hautveränderungen von 32 Katzen mit feliner allergischer Dermatitis wurden sowohl mittels FeDESI als auch mit SCORFAD vor der Behandlung und einmal monatlich während der Behandlung beurteilt. Es wurde Ciclosporin bei einer Dosis von 7 mg/kg *per os* einmal täglich für 1 Monat verabreicht, danach wurde, wenn möglich, die Dosis für zwei nachfolgende Monate reduziert. Der Juckreiz wurde von den BesitzerInnen mittels Visual Analog Scale (VAS) beurteilt. Die Korrelation zwischen dem ersten Besuch und zwischen den absoluten und prozentualen Verbesserungswerten beim Besuch 1, 2 und 3 wurde statistisch mittels nichtparametrischem Spearman's Rank Korrelationstest analysiert.

Ergebnisse – Die Korrelation zwischen FeDESI, SCORFAD und VAS Juckreizwerten war zum Ausgangszeitpunkt niedrig und für alle Kombinationen nicht signifikant. Die Korrelation der absoluten Verbesserungen der Werte war moderat und nur zwischen FeDESI und VAS Juckreizwerten beim 3.

Besuch signifikant. Die Korrelation der Verbesserung in Prozentwerten war moderat. Diese war zwischen FeDESI und SCORFAD und zwischen FeDESI und VAS Juckreiz beim 2. Besuch signifikant, während die Korrelation bei den Besuchen 3 und 4 hoch und für alle Kombinationen signifikant war.

Schlussfolgerung – Nur prozentuale Verbesserungsangaben von FeDESI und SCORFAD Werten scheinen gut zu korrelieren. SCORFAD ist das einzige Bewertungssystem, welches auch validiert ist, obwohl es weniger gut mit dem Juckreiz zu korrelieren scheint und schwieriger zu verwenden sein könnte wie FeDESI. Das Letztere könnte daher zur Verwendung passender sein, aber es sind weitere Studien notwendig, vor allem in Bezug auf eine Validierung.

要約

背景 — Feline Dermatitis Extent and Severity Index (FeDESI)およびScoring Feline Allergic Dermatitis (SCORFAD)はネコのアレルギー性皮膚炎の評価のための2種類の異なるスコアリングシステムである。

目的 — FeDESIおよびSCORFADとそう痒の間の相関を評価すること。

供与動物および方法 — ネコアレルギー性皮膚炎に罹患した32頭のネコの皮膚病変を、治療前とシクロスポリンを7 mg/kg 1日1回経口投与で治療した1ヶ月と可能である場合に漸減した2ヶ月の間の治療中、月に1回FeDESIおよびSCORFADの両方で評価した。ペットの飼い主がそう痒をビジュアルアナログスケール(VAS)で評価した。1回目の来院でのスコア間の相関、1、2、3回目の来院での絶対改善スコアおよびスコア改善率との相関をノンパラメトリックスピアマンの順位相関係数を用いて統計学的に解析を行った。

結果 — FeDESI、SCORFADおよび基準値のVASそう痒スコアの間の相関は低く、すべての組み合わせで有意でなかった。絶対スコア改善値の相関は中程度で、3回目の来院時でのFeDESIとVASそう痒の間のみ有意であった。2回目の来院での改善率の相関は中程度で、FeDESIとSCORFADの間およびFeDESIとVASそう痒の間の相関は有意であった一方、3回目および4回目で相関は高く、それぞれの組み合わせで有意であった。

結論 — FeDESIとSCORFADスコアの改善率のみがよく相関するようであった。そう痒と相関が弱く、FeDESIを使用するのがより難しい可能性があることにもかかわらず、SCORFADは正当性が認められている唯一の臨床スコアであった。それゆえに後者の方が使用に対してより適切であるかもしれないが、この正当性に関してはさらなる調査が必要とされる。

摘要

背景 — 猫皮炎程度和严重性指数(FeDESI)以及猫过敏性皮炎评分系统(SCORFAD),是猫过敏性皮炎的两种不同的评分体系。

目的 — 评估FeDESI、SCORFAD和瘙痒的相关性。

动物和方法 — 同时使用FeDESI和SCORFAD两个体系,分别在治疗前、治疗过程中的每月,对32只过敏性皮炎患猫的皮肤病损进行一次评估,初始治疗的1个月内口服环孢素,剂量为7 mg/kg,每日一次,随后的2个月适时逐渐减量。宠物主人使用直观类比标度(VAS)法对动物瘙痒进行评分。使用非参数斯皮尔曼等级相关试验法,进行统计分析。在第1次评估时,对比两者分值的相关性,在第1、2、3次评估时,对比绝对值和百分比数的改善程度。

结果 — FeDESI、SCORFAD和VAS瘙痒评分在基础水平相关性低,所有组合无显著差异。只有在第3次评估时,FeDESI和VAS瘙痒评分绝对值有中度或明显缓解。在第2次评估时,FeDESI和SCORFAD,以及FeDESI和VAS瘙痒评分的缓解率相关性有中度至明显的提高,然而在第3和4次评估时,每个组合都有较高且明显的提高。

总结 — FeDESI和SCORFAD只有百分比数的提高看起来是一致的。虽然SCORFAD好像和瘙痒关系较小,也许较FeDESI使用复杂,但它是唯一一个经过验证的评分体系。这样看来,后者可能更适用,但为了获得批准,仍需进一步的研究。