387

Using multi-dimensional scaling (MDS) and hierarchical clustering, novices can sub-classify basal cell carcinomas (BCCs) in a similar manner to experienced dermatologists

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Accurate visual identification of cutaneous malignancies by dermatologists relies little on medical knowledge or analytical rules; but instead on non-analytical pattern recognition (NAPR) in combination with a large personal library of examples developed through specialist training. We are interested if lay novices have intrinsic NAPR abilities that could allow them to classify skin cancers. 30 images of BCCs were randomly selected from the Department's database. 43 lay volunteers were enrolled. The subjects were asked to make similarity assessments remotely over the Internet using custom-built software. The software displayed a sequence of 10 screens, each screen having 2 upper target lesions and a set of 24 sample lesions below. For each screen the participants were asked to match between 0 and 6 sample images with the target lesions they considered most similar. Data regarding demographics and the structure of the screens were saved along with the matches provided by the subjects. In total 2395 sample to target matches were performed. The resultant similarity scores were converted to a distance matrix and a 2D non-parametric MDS model with a Kruskal's Stress of 19.12% was derived. This demonstrated that novices could group the BCCs into distinct subgroups e.g. nodular, infiltrative, ulcerative, superficial. For a more objective analysis of the similarity scores, the spectral clustering algorithm of Ng was adapted to accept the data. Clustering was then performed hierarchically. The resulting configuration confirmed that novices could visually sub-classify BCCs in a similar manner to that shown by the MDS model. Novices with no background knowledge or specific education can sub-classify BCCs in a similar manner to experienced dermatologists, only on the basis of their intrinsic perception of lesions' visual similarity. Strategies to exploit intrinsic NAPR should be investigated to improve non-experts' skin cancer diagnosis.

388

Impact of STROBE Statement Publication on Quality of Observational Study Reporting in Dermatology (REPODERM study)

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To assess the impact of the 2007 STROBE statement on the quality of observational study reporting in dermatological journals and to investigate factors associated with adequate reporting. Cohort, case-control, and cross-sectional studies published between 2004 and 2010 in the 4 dermatological journals having the highest 5-year impact factors (IF) were analysed (authors, affiliations and publication dates were masked). Proportion of STROBE items adequately reported (STROBE score) was computed. Factors associated with adequate reporting (in the top25 of the STROBE score) were assessed using multivariate logistic regression. Impact of the 2007 STROBE statement was assessed using before-after analysis and segmented regression analysis of interrupted time series. Of the 456 included articles, 41% reported cohort, 36% cross-sectional, and 23% case-control studies. The median STROBE score was 57% (range, 18%-98%). Factors independently associated with adequate reporting were a more recent year of publication (OR 1.3, 95%CI 1.2-1.5), journal IF (1.9, 1.2-3.1), retrospective cohort design (0.5, 0.2-0.9), correctly stated design (3.9, 2.3-6.6), financial support (4.9, 2.7-9), and a methodologist among the authors (5.1, 2.9-9.1). Before-after analysis indicated a significant STROBE score increase between the pre and the post STROBE periods (median score 48% versus median score 58%, p<0.001). Before STROBE publication, the STROBE score increased significantly, by 1.19% per six-month period (absolute increase 95%CI, 0.26% to 2.11%, p=0.016), but no significant changes in score trends occurred (-0.40%; 95%CI, -2.20 to 1.41; p=0.64) after STROBE publication. A high proportion of observational studies were inadequately reported. Journal IF, design, financial support and participation of a methodologist were associated with adequate reporting. The quality of reports increased over time but was not affected by the STROBE statement publication.

389

Skin barrier abnormality due to FLG mutations is associated with increased serum 25-OH vitamin D levels

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Most vitamin D3 is produced in the skin upon exposure to UVB. Deficiency of the key epidermal filaggrin proteins due to inheritance of mutations in the FLG gene affects 10% of the general population. The filaggrin metabolite urocanic acid contributes to photo-protection. We hypothesized that mutation carriers had higher concentrations of serum 25-hydroxyvitamin D due to increased UVB penetration. Five population-based cohorts (n=9950) were investigated for association between the two most common Caucasian FLG mutations, R501X and 2282del4, and serum 25-hydroxyvitamin D concentrations. Multiple linear regression models were fitted to adjust for potential confounding variables. The study-specific association estimates were combined using the inverse-variance weighted fixed effect model. 25-hydroxyvitamin D concentrations were 10% (CI95%: 7-13%; p=2x10-9) higher in individuals with presence of at least one of the two FLG mutations in a combined analysis of children and adults showing homogeneity. FLG mutations are associated with significantly higher vitamin D concentrations in Danes and Germans. Carriers of FLG mutations might have had evolutionary heterozygous advantage from favourable vitamin D status due to increased solar UVB penetration through the skin.

390

Clinical characteristics Predicting Internal Neurofibromas in 357 Children with Neurofibromatosis-1: results from a cross-selectional study

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To identify clinical characteristics associated with internal neurofibromas in children with NF1, as a means of ensuring the early identification of patients at high risk for malignant peripheral nerve-sheath tumors developed from preexisting internal neurofibromas. We used data from 2 NF1 populations, in France and North America. The French database comprised 1083 patients with NF1 and the Neurofibromatosis Institute Database of North America comprised 703 patients. Patients younger than 17 years of age were eligible for our study if they had been evaluated for internal neurofibromas using computed tomography and/or magnetic resonance imaging. Clinical characteristics associated with internal neurofibromas by univariate analysis (P≤0.15) were entered into a multiple logistic regression model after checking for potential interactions and confounding. Multiple imputation was used for missing values using the multiple-multivariate-imputations-by-chained-equations procedure with the missing-at-random assumption. Among the 746 children in the 2 databases, 357 (48%) met our inclusion criteria. Their mean age was 7.7±5.0 years and there were 192 (53.8%) males. Internal neurofibromas were present in 35 (9.8%) patients. Internal neurofibromas developed earlier in females than in males and their prevalence increased during adolescence. Factors independently associated with internal neurofibromas were age (OR=1.16 [1.07-1.27]), xanthogranulomas (OR=5.85 [2.18-15.89]) and presence of both subcutaneous and plexiform neurofibromas (OR=6.80 [1.52-30.44]). The general pattern of the results after multiple imputation was similar to that obtained in the patient subset with complete data. Several easily recognizable clinical characteristics indicate a high risk of internal neurofibromas in children with NF1 and a need for very close monitoring.

391

Smoking and hidradenitis suppurativa: risk or pronostic factor? Results from a series of 947 patients

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Between 80 and 90% of patients with hidradenitis suppurativa (HS) are smokers. Several studies suggest that smoking is a risk or a triggering factor of HS. Conversely, little is known about the role of smoking in severity of HS. The objective was to assess the association between smoking status, particularly smoking status before the beginning of HS, and severity of the disease. Clinical data and smoking characteristics (never, past or current smoker, number of cigarette per day and pack-years, and date of beginning of smoking), of 917 consecutive patients consulting for HS between 2002 and 2011 to the dermatology clinic of Henri-Mondor hospital, Paris area, France were prospectively collected. HS diagnosis was systematically validated. HS severity was assessed using Sartorius score and Hurley classification. Patients were 32.6 (± 9.5) years old, 69.3% were women. Among them, 72.1% were current smokers and 8.8% past smokers. Median HS duration was 8 years (Q1=4-Q3=15). Among current and past smokers, 57% began smoking before the beginning of HS. Current smokers were less frequently in highest Hurley classes, i.e II or III, than never smokers (33.1 versus 42.6%; p = 0.003). Sartorius score was also weaker in current smokers than never smokers ((17 (11-28) versus 18 (11-33); p= 0.19) although not significant. Similarly, smokers before HS had a weaker median Sartorius score than never smokers (16 (9-27) versus 18 (11-33); p=0.004) and were less frequently in Hurley classes II or III (32.5% versus 42.7%; p=0.02.) Conversely, smokers after HS had similar Sartorius score and Hurley classes repartition than never smokers (p=0.75 and p=0.38). In multivariate analysis, severity assessed by Sartorius score and Hurley classification remained significantly weaker in smokers before HS than never smokers. Our results may suggest that smokers, particularly smokers before HS, had a less severe form of HS than never smokers.

392

The European TREatment of severe Atopic eczema in children Taskforce (TREAT) Survey – analysis of European responses

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A subset of children with severe atopic eczema requires systemic treatment to induce and maintain disease control. There is a lack of evidence to support choice of agent. An online survey was conducted amongst members of the paediatric dermatology societies/interest groups in the UK, France, Germany, Italy, the Netherlands, Denmark, Sweden and Spain. Consultant members were invited to participate. A real case scenario was included to standardise responses. We asked about 1st, 2nd and 3rd choice medication, dosing and duration of treatment. Further questions explored factors influencing choice of agent, use of guidelines and availability of specialist nurse input. 765 invitation emails were sent out; 44 were undeliverable and 27 replied that the survey was not relevant to their practice. 343 of the remaining 694 (49.4%) completed the survey. 306 (89.2%) were dermatologists and 37 (10.8%) paediatricians. 244 (71%) initiate systemic therapy for children with severe eczema and these were more likely to be dermatologists and those in university teaching hospitals. 1st line drugs of choice were cyclosporin (43.0%), corticosteroids (30.7%) and azathioprine (21.7%). Cyclosporin was also the most commonly used 2nd line medication, 82 (33.6%), with methotrexate most frequently ranked 3rd choice by 64 (26.2%). Few, 53 (21.7%), use mycophenolate mofetil, commonly 3rd line. 100 (29.2%) use national guidelines to direct use of systemics in paediatric eczema. Nursing support for eczema education is available to 143 (58.6%). In the 8 countries surveyed, cyclosporin was the most commonly used 1st and 2nd line systemic, followed by corticosteroids, azathioprine and methotrexate. Although all 4 drugs appear efficacious based on clinical experience, a randomised controlled trial comparing systemics in childhood atopic eczema is required.