The diagnostic accuracy of Danish GPs in the diagnosis of pigmented skin lesions

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Background. The GP often has a primary function in assessing pigmented skin lesions in Denmark. No data are available on the diagnostic accuracy of this process.

Objective. We aimed to study the sensitivity, specificity and positive prognostic value of the diagnosis made by 27 trained or trainee GPs.

Method. We tested the diagnostic accuracy of the viewing of colour slides of pigmented skin lesions under standardized conditions at a seminar on skin cancer. Diagnostic accuracy was determined only for the clinically relevant diagnosis of benign or malignant.

Results. The median diagnostic accuracy (sensitivity) for the group as a whole was 0.75 (95% CI 0.65–0.80), the specificity was 0.70 (95% CI 0.68–0.79) and the positive predictive value 0.70 (95% CI 0.62–0.77).

Conclusion. These values are comparable with previously published figures for trainee dermatologists, and it is therefore concluded that ongoing interest rather than basic training is the major determinant for clinical acumen.

Keywords. Clinical competence, diagnostic errors, melanoma, nevi.

Materials and methods

A study was conducted among 27 doctors working as whole or part-time GPs (13 whole-time GPs (4 men, 9 women) and 14 part-time (trainee) GPs (7 men, 7 women)) at a seminar on skin cancer and skin surgery to gauge the level of diagnostic accuracy. The study group was therefore biased towards interested physicians. None of the participants in the survey had any formal dermatological experience, and none had had lesions removed themselves. The assessment was done prior to any teaching. To describe immediate recognition, 20 slides of PSL were shown for 20 seconds each, and the audience asked to assess if the lesion was benign or malignant on a form provided. This was thought to be a realistic level of decision to be made by most GPs, as patients suspected of malignancy are generally referred for treatment elsewhere. The PSLs were chosen to represent a range of tumours and morphologies and included 10 malignancies (7 malignant melanoma (3 typical/4 atypical), 3 pigmented basal cell carcinomas (2 typical/1 atypical)) and 10 benign lesions (8 pigmented naevi (5 typical/3 atypical), 1 skin tag, 1 seborheic keratosis).

The diagnostic accuracy was assessed by calculating sensitivity (= true positive/true positive + false negative), specificity (= true negative/true negative + false positive)
and positive predictive value (= true positive/true positive + false positive) for each GP, and presenting the median values with 95% confidence intervals—see Table 1. The values were compared the Bonferroni Multiple comparisons test, and linear regression for analysis of correlation between age and accuracy.

Results

The median diagnostic accuracy (sensitivity) for the group as a whole was 0.75 (95% CI 0.65–0.80), the specificity was 0.70 (95% CI 0.68–0.79) and the positive predictive value 0.70 (95% CI 0.62–0.77). Correlations between postgraduate age and sensitivity, specificity and positive predictive value were not significant. See Table 1 for results.

Discussion

Diagnostic accuracy for PSL had not been described previously in Denmark, but was found to be comparable to previously published studies from dermatologists or plastic surgeons in other countries. Sample size and selection may have influenced the result, as only GPs attending a skin cancer seminar, i.e. suggesting a pre-existing interest in PSL, were studied. The results may therefore be interpreted to represent a better than average result. Full-time GPs were older ($P < 0.001$) and had a greater postgraduate age ($P < 0.001$) than part-timers (trainees), but no difference in sensitivity, specificity or positive predictive value was found. Early studies in the UK suggested that the overall accuracy as described by the sensitivity was only about 50% for PSL, although a more complex question was asked than in this study, as the physicians in question were asked to give a specific diagnosis e.g. dysplastic naevi, rather than only benign/malignant.\(^1\) Benign/malignant is thought to be a more realistic end-point, as suspicion of malignancy leads to onward referral and therefore no decision has to be made regarding the ultimate treatment. Different levels of accuracy may be expected from different specialities, with plastic surgeons and dermatologists having higher levels than other professions, reaching up to 90% accuracy for both benign and malignant lesions.\(^2\)–\(^4\) The level of accuracy among junior dermatologists has been given as 56–62%.\(^4\) In contrast, the clinical diagnostic accuracy for malignant melanoma among GPs in the UK has been reported to be as low as 17%.\(^5\)

This may be explained partly by the frequency with which the GPs are exposed to diagnostic decisions regarding PSL. The contribution of benign tumours to the case-mix of dermatological departments suggest that they constitute a large proportion in the UK while they constitute a negligible proportion in Denmark,\(^6\)\(^7\) and it is therefore hypothesized that simple exposure to clinical decisions regarding PSL among GPs is lower in the UK.

Common sense and a previous study imply that diagnostic accuracy increases with experience.\(^4\) Increasing postgraduate age did not, however, correlate with the diagnostic accuracy in the sample studied here, which may be explained by individual differences overshadowing the small sample size used.

In conclusion, this study of diagnostic accuracy for PSL among Danish GPs and trainees interested in skin cancer suggest that it is comparable to previously published figures for trainee dermatologists, and that ongoing interest rather than basic training are determinant for clinical acumen.

References