Current biopsy practices for suspected melanoma: A survey of family physicians in Southwestern Ontario

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BACKGROUND: Family physicians (FPs) have an opportunity to diagnose pigmented lesions early with a timely biopsy.
OBJECTIVE: To assess current biopsy practices used by FPs in diagnosing melanoma.
METHODS: A computer-generated random sample of 200 practicing FPs from large and small communities in Southwestern Ontario was identified from the College of Physicians and Surgeons of Ontario physician directory. Paper-based surveys exploring practice setting, basic melanoma knowledge, biopsy practices and referral wait times were mailed using a modified Dillman protocol.
RESULTS: The response rate was 50% and respondents reflected the demographic characteristics of FPs nationwide as per the National Physician Survey. Knowledge testing revealed reasonable mean (± SD) scores (3.2±1.03 of 5). Twenty percent of respondents would always perform an excisional biopsy of skin lesions suspicious for melanoma. The remaining 80% would avoid an excisional biopsy in an aesthetically sensitive area and if there was risk of failure to close the defect primarily, among other reasons. If an excisional biopsy were not performed, one-half of respondents would perform an incisional biopsy (eg, punch biopsy). In large communities, 24% of patients were not seen by a surgeon within six months when referred without a tissue biopsy, leading to delayed diagnosis.
DISCUSSION: Educating and supporting FPs to perform incisional biopsies in cases for which excisional biopsies are inappropriate should result in earlier diagnosis of melanoma.
CONCLUSION: FPs appropriately recognize that excisional biopsies are ideal in melanoma management and one-half will move on to an incisional biopsy when excision is not appropriate.

Key Words: *Biopsy; Excisional biopsy; Family physician; Incisional biopsy; Melanoma*

Les pratiques de biopsie en cas de présomption de mélanome : sondage auprès des médecins de famille du sud-ouest de l'Ontario

HISTORIQUE : Les médecins de famille (M) peuvent diagnostiquer des lésions pigmentées rapidement grâce à une biopsie.
OBJECTIF : Évaluer les pratiques de biopsie actuelles des MF pour diagnostiquer un mélanome.
MÉTHODOLOGIE : Un échantillon aléatoire créé par ordinateur de 200 MF en exercice de grandes et petites collectivités du sud-ouest de l'Ontario a été extrait du répertoire de l'Ordre des médecins et chirurgiens de l'Ontario. On leur a posté des sondages papier au sujet de leur lieu de pratique, de leurs connaissances de base sur les mélanomes, de leurs pratiques de biopsie et des temps d'attente avant l'aiguillage, selon un protocole de Dillman modifié.
RÉSULTATS : Le taux de réponse s'élevait à 50 % et les répondants reflétaient les caractéristiques démographiques des MF au pays, conformément au Sondage national des médecins. Les tests sur les connaissances ont révélé des indices moyens (± ÉT) raisonnables (3,2±1,03 sur 5). Vingt pour cent des répondants effectueraient toujours une biopsie-exérèse des lésions cutanées en cas de présomption de mélanome. Les 80 % restants éviteraient une biopsie-exérèse dans une zone esthétiquement fragile et en présence d'un risque de ne pas fermer l'anomalie primaire, entre autres. S'ils rejetaient la biopsie-exérèse, la moitié des répondants effectueraient une biopsie incisionnelle (p. ex., biopsie à l'emporte-pièce). Dans les grandes collectivités, 24 % des patients n'étaient pas vus par un chirurgien dans les six mois s'ils étaient aiguillés sans biopsie des tissus, ce qui s'associait à un retard de diagnostic.
EXPOSÉ : L'enseignement et le soutien des MF à effectuer une biopsie incisionnelle lorsque la biopsie-exérèse ne convient pas devraient favoriser un diagnostic plus rapide des mélanomes.
CONCLUSION : Le MF indiquait correctement que les biopsies-exérèses sont idéales pour prendre en charge les mélanomes et la moitié opterait pour une biopsie incisionnelle lorsque l'excision ne convient pas.

Over the past decade, worldwide trends have shown an increase in the incidence of melanoma (1). Although there has been an increase in disease incidence, the mean tumour thickness is decreasing. The most important tools to battle this disease are primary prevention (including sun protection) and early detection. Despite advances in the medical and surgical management of melanoma, the only factor that will improve survival is early diagnosis of the disease (2).

Family physicians (FPs) play a key role in the early diagnosis of melanoma because patients will present to their FPs for the initial evaluation. Unfortunately, the ability of physicians to accurately diagnose melanoma by clinical examination can be quite poor, with rates as low as 42% for general practitioners (3). A correctly performed biopsy is, therefore, a critical initial step in the diagnosis and management of cutaneous melanoma.

Biopsy techniques that have been used include shave, incisional (eg, punch biopsy) and excisional biopsies. Currently, the National Institutes of Health recommends taking an excisional biopsy for obtaining a diagnosis of a skin lesion suspicious for melanoma (4). This biopsy method enables the diagnosis and staging of the tumour and determines future investigation, treatment and prognosis (4). A complete excisional biopsy may be difficult because of the level of surgical experience of the physician, cosmetic issues, tissue laxity and clinic operational time constraints. As an alternative, an incisional biopsy technique is acceptable for large lesions when excision is impractical or when the likelihood for melanoma is low (5). Although incisional biopsies may make the diagnosis of melanoma more challenging for pathologists and may occasionally be falsely negative due to sampling error, conducting a simple incisional biopsy rather than relegating a patient to a lengthy specialist wait for biopsy is an important step in detecting a melanoma earlier in its life cycle.

There is a paucity of literature examining the techniques FPs are using for the investigation of malignant melanoma. Sempowski et al (6)

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TABLE 1
Demographic characteristics of respondents compared with respondents of the 2010 National Physician Survey

Characteristic	Melanoma survey respondents (n=93)	National Physician Survey respondents (n=6602)	P
Full time practice (>35 h/week)	75 (81)	5169 (78)	0.50
Private office/clinic	58 (62)	4199 (64)	0.89
Solo practice	24 (26)	1472 (22)	0.49
Urban/suburban patient population	33 (36)	3466 (53)	0.002*
>25 years in practice	39 (42)	2291 (35)	0.18

*Data presented as n (%) unless otherwise indicated. *Statistically significant*

surveyed Canadian FPs examining the provision of four distinct minor office procedures and found that 63% of FPs were performing dermatological biopsies. The top reasons for not performing a dermatological excision were "time" and "lack of up to date skills". Although the dermatological excisions in the study by Sempowski et al (6) are not specific to suspicious pigmented lesions, this does provide some insight into the reasons why FPs are not performing biopsies in general. Our study expands on this by examining knowledge regarding melanoma and biopsy alternatives, comfort level with pigmented skin lesions suspicious for melanoma and the propensity for family physicians to investigate these lesions before defaulting to specialist referral. The objective of our study was to assess current biopsy practices used by FPs in the diagnosis of melanoma.

METHODS

Survey development

Item generation and reduction: Items were generated with a literature review of current biopsy practices used to investigate a lesion suspicious for melanoma. There were no current tools available to assess the experiences and beliefs of FPs with regard to tissue diagnosis of cutaneous melanoma. Feedback from a continuing medical education presentation (CME; May 2009, University of Western Ontario [London, Ontario], Surgical Oncology Update) about melanoma targeted to FPs was used to further generate items for the survey. One plastic surgery resident, plastic surgeon, FP and dermatopathologist generated items for inclusion and reduced items thereafter through e-mail conferencing. The survey was arranged in a multiple-choice format, asking a series of questions related to practice setting, melanoma knowledge and biopsy practices for suspected melanoma. Burns et al (7) published a guide for the design and conduct of self-administered surveys, which was followed in the development of the survey used in the present study.

Pretesting: The survey was then pilot tested by e-mailing 10 FPs a link to the survey via Survey Monkey (SurveyMonkey Inc [www.surveymonkey.com], USA). Survey respondents provided feedback on scope, item clarity and completeness. Furthermore, respondents were asked to examine the questionnaire with regard to flow, salience, acceptability and administrative ease, and identifying unusual, redundant, irrelevant, or poorly worded question stems and responses. They were also asked to record the time it took them to complete the questionnaire (range 5 min to 10 min; mean 6.5 min).

Survey administration

The finalized survey was administered as a mail-out, self-administered questionaire between February and May 2012. The sampling frame was chosen to include an equal number of physicians from small communities (SC; population <50,000 with no cancer centre) and large communities (LC, population >200,000 with a cancer centre) in Southwestern Ontario. Samples were then chosen from these two populations equally for later comparison of biopsy patterns and referral practices. Using postal codes and the College of Physicians and Surgeons of Ontario website, all FPs in these communities were identified. Resident physicians and physicians who were retired/not practicing were excluded. One hundred randomly chosen physicians from SC and 100 randomly chosen physicians from LC were invited to participate. The survey was administered using a modified Dillman protocol (8). Following the initial mail out, a reminder letter was sent two weeks later. Nonresponders were re-mailed the survey four weeks later. To maximize the response rate, physicians who participated in the survey were offered an opportunity to win a prize worth $100.

Research ethics

This survey was endorsed by the research ethics board at Western University (REB #102062), London, Ontario.

Statistical analysis

To summarize the data, descriptive statistical analyses were performed including measures of central tendency, frequency and variability. χ^2 analysis was used to compare proportions between groups; $P<0.05$ was considered to be statistically significant.

RESULTS

Demographics

Overall, 99 physicians responded, corresponding to a response rate of 49.5%. Six of the respondents were excluded because they were currently not practicing family medicine, resulting in 93 analyzable surveys. The respondents were well distributed between SC and LC, with 55% of FPs from SC and 44% from LC.

Most respondents (n=75 [81%]) were practicing as full time (>35h/week) physicians and two-thirds of respondents (n=58 [62%]) were practicing in a private clinic. Furthermore, the majority (n=63 [68%]) of physicians were in a group practice and train medical students/residents (n=65 [70%]). Physician demographics of survey respondents were similar to the 2010 National Physician Survey of FPs across Canada with the exception that, by design, more suburban FPs were surveyed (9) (Table 1).

Sixty-one percent of FPs had diagnosed a melanoma in the past two years. Eighty-nine percent of FPs would refer to a specialist in the community to surgically treat melanoma (ie, wide local excision ± sentinel node biopsy). FPs in SC had less available specialists in their community that surgically treat melanoma (ie, wide local excision ± sentinel node biopsy) compared with FPs in LC (83% versus 98%; $P<0.05$).

Knowledge

To determine how well FPs understood the diagnosis and prognosis of melanoma, five skill-testing questions were used. These questions were in multiple-choice and true/false format and inquired about the gold standard biopsy method of a pigmented lesion, acceptability of incisional biopsy as a biopsy technique in melanoma investigation, the best prognostic pathological factor and the five-year survival range of an early-stage and late-stage melanoma. The mean (± SD) score was 3.2±1.03 of 5 (63%). Seventy-four percent of FPs passed the melanoma knowledge component (with the assumption that 60% is a passing grade) and 34% of FPs did exceptionally well (scored ≥80%). There was no difference when comparing mean test score between SC FPs and LC FPs ($P=0.35$).

To understand where the knowledge gap existed, the questions were broken down into diagnosis- and prognosis-related questions and were analyzed separately. The diagnosis-related questions included the gold standard biopsy technique of a pigmented lesion and acceptability of incisional biopsy as a biopsy technique in melanoma investigation. The prognosis-related questions included the best pathological factor, the five-year survival range of an early-stage and late-stage melanoma. The mean score for the diagnosis questions was 1.0±0.67 of 2 (50%). The mean score for the prognosis questions was 2.13±0.71 of 3 (71%).

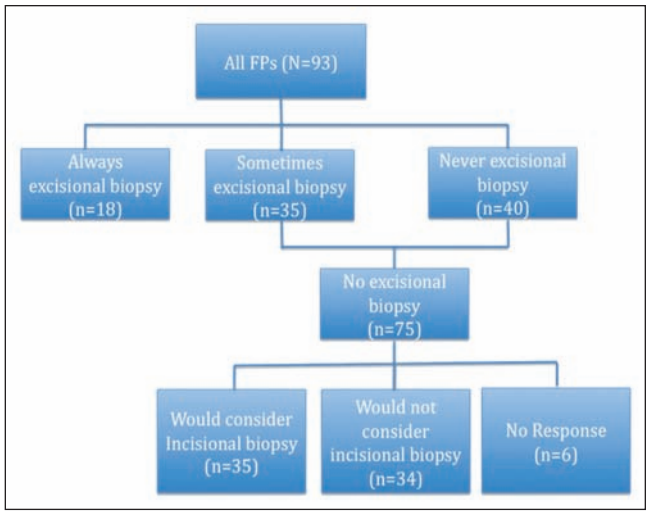

Figure 1) *Flowchart of biopsy practices of family physicians (FPs)*

In case the survival-related knowledge questions were unfairly difficult, they were removed and the three questions pertaining to biopsy and pathology were retained. The mean score on the less difficult questions (63% [1.9±0.77 of 3]) was similar to the mean score on the more difficult questions (63% [1.26±0.57 of 2]).

Biopsy practices

Nineteen percent of respondents stated that when faced with a skin lesion suspicious for melanoma, they will always biopsy the lesion with an excisional biopsy, the gold standard biopsy technique. Forty-three percent of FPs stated that they will never biopsy the lesion and 38% stated that they will perform excisional biopsies in some situations (Figure 1).

FPs who were not always performing excisional biopsies for lesions suspicious for melanoma (n=75 [81%]) indicated numerous reasons to explain why they were not performing excisional biopsies in all circumstances (Figure 2). Of these FPs, approximately one-half (47%) would consider performing an incisional biopsy as an alternative. An incisional biopsy was indicated as an option in cases for which the lesion was too large to excise and close primarily, the lesion was in a challenging anatomical location for full excision and if the specialist insisted on a pathological diagnosis for acceptance of a referral (Figure 3).

When comparing SC and LC FP biopsy practices, there was no significant difference with respect to performing excisional biopsies (23% of SC FPs "always perform" versus 15% of LC FPs "always perform"; P=0.27). There was also no difference with respect to consideration of incisional biopsy when excisional biopsy is not an option (57% of SC FPs "consider incisional biopsy" versus 44% of LC FPs "consider incisional biopsy"; P=0.28).

Referral patterns

Regarding referral delay that may occur between identifying a suspicious lesion and having a surgeon see the patient for a biopsy, SC FPs recalled little delay, with 90% of patients seen within three months by a surgeon. Poorer access was seen in the LC, where only 59% were seen promptly (P=0.003). More concerning is that in LC, 24% of the respondents' patients were not seen by a surgeon within six months. Referrals were more likely to be rejected from surgeons in LC (21%) than in SC (3%) (P=0.015).

Dermatologist access was recalled as somewhat better than surgeon access. Poorer access persisted in larger communities, with 68% being seen within three months, whereas 85% of patients in smaller communities were seen promptly (P=0.11). Most patients referred to a dermatologist were recalled as being seen within six months (Table 2).

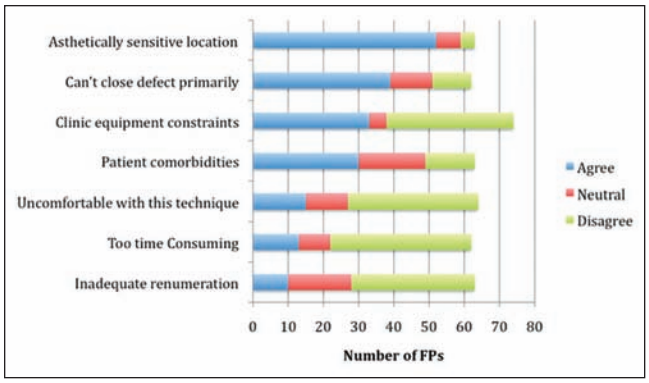

Figure 2) *Reasons why family physicians (FPs) are not always performing excisional biopsies*

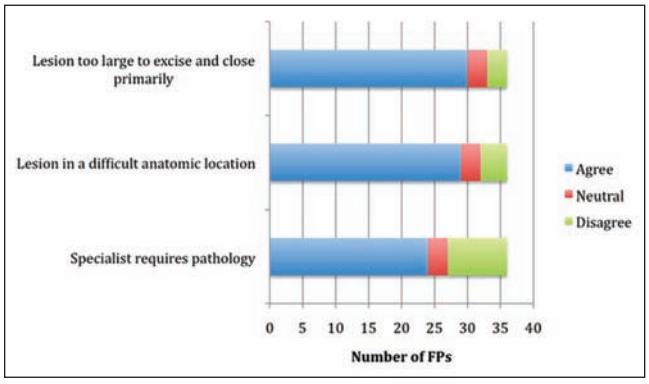

Figure 3) *Reasons why family physicians (FPs) perform incisional biopsies*

DISCUSSION

The present study explored the current biopsy techniques used by FPs in the diagnosis of melanoma via a survey instrument.

The study found that FPs possessed reasonable knowledge regarding diagnosis and prognosis of melanoma, with three-quarters of physicians scoring a passing grade on the skill-testing questions. This is somewhat in contrast to a previous survey of FPs in Ontario by Stephenson et al (10) conducted in 1997 that found >50% FPs lacked confidence in being able to recognize melanoma on clinical examination. Stephenson et al (10) found knowledge deficits on history, physical examination and risk factors for melanoma. Possible explanations for this discrepancy include: educational efforts through residency and CME has been effective in increasing FPs' knowledge in the diagnosis and management of melanoma since 1997; and sampling differences, although the demographics of this study's respondents reflected those in the National Physician Survey in 2010. This knowledge test was not validated and the difficulty level of each question may not have been suitable for the average FP.

It was reassuring that the majority (57%) of surveyed FPs would perform an excisional or incisional biopsy for lesions suspicious for melanoma and that practices were similar in both SC and LC. However, 38% of respondents would not perform biopsies for lesions suspicious for melanoma – this is an area for definite improvement because studies in the recent decade have shown that recurrence rates, disease-free survival and overall survival appear to be similar, independent of biopsy technique (11,12) and, when diagnosed early, >90% of all primary melanomas can be cured with surgical excision alone (13). Family medicine residency programs and CME programs may wish to focus on imparting the necessary knowledge and skills for all FPs to biopsy lesions suspicious for melanoma. Furthermore, proper remuneration may be necessary to encourage and sustain biopsy practices for FPs in the office setting.

With regard to the practice of excisional biopsy for lesions suspicious for melanoma, only a minority of FPs (19%) were sufficiently

TABLE 2
Referral wait times for biopsy of pigmented lesions to dermatologists and surgeons

	Referral to dermatologist for biopsy		Referral to surgeon for biopsy	
Wait time, months	Small community (n=33)	Large community (n=31)	Small community (n=39)	Large community (n=29)
<3	28 (85)	21 (68)	35 (90)	17 (59)
3–6	4 (12)	8 (26)	3 (8)	5 (17)
>6	1 (3)	2 (6)	0 (0)	1 (3)
Referral rejected	0 (0)	0 (0)	1 (3)	6 (21)

Data presented as n (%). The total number of respondents does not equal the number of physicians respondents per category because there was another option to the question "I always biopsy a pigmented lesion suspicious for melanoma", which was discarded for clarity

comfortable with the technique to use it consistently. Educational, office management and health policy considerations must be examined to identify ways that can further support FPs in this practice. The present study and past literature support the finding that excisional biopsy may be difficult because of the level of surgical experience of the physician, cosmetic issues, tissue laxity and/or clinic operational time constraints (4,6,14).

It was reassuring to note that one-half of physicians who do not always perform an excisional biopsy would move to an incisional biopsy. An incisional biopsy is quick, easy to perform, cost effective, associated with minimal morbidity and does not compromise long-term oncological outcomes for lesions determined to be malignant (5,14). The major disadvantage of incisional biopsies is a less reliable histopathological diagnosis (14). The accuracy of an incisional biopsy also depends on the expertise of the clinician. Suspecting melanoma clinically, the partial biopsy specimens should be directed to the most deeply pigmented, elevated, nodular or other clinically suspect area. It is equally important to use an adequately sized punch biopsy (at least 3 mm punch) for biopsying these pigmented lesions. Due to sampling error, the portion biopsied may not be the most histologically representative portion of the lesion, and if the pathological diagnosis rendered is incongruent with FPs suspicion of melanoma, further incisional biopsy or referral to a specialist for excision is necessary (14,15).

One possible limitation to the present study is recall bias, another is selection bias. FPs who participated in our survey may represent self-selected physicians with a special interest in this topic or those who have more knowledge or skill in biopsy techniques. However, if present, this is likely a negligible limitation given that the respondents' demographics reflected those of the National Physician Survey.

CONCLUSION

The present study found that FPs in Southwestern Ontario are generally well prepared to diagnose and manage lesions suspicious for melanoma. Areas for potential improvement to facilitate early diagnosis and management were identified and should be considered to ensure the best outcomes for patients who develop melanomas.

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