Malignant Melanoma – How to Check and When to Cut

Introduction – Why Screening is Important

Despite our best efforts, worldwide there is an **increasing incidence** of melanoma, as well as an **increasing mortality**. No data are available for South Africa, but estimated annual new cases in the USA will be 70 230, while deaths are estimated to be 8 790 (1 death per 7.98 diagnoses [1:8]). This indicates the seriousness of this diagnosis. The 5 year survival for stage Ia is 97% compared with stage IV at less than 15%. The Kaplan-Meier survival curves demonstrate this clearly.

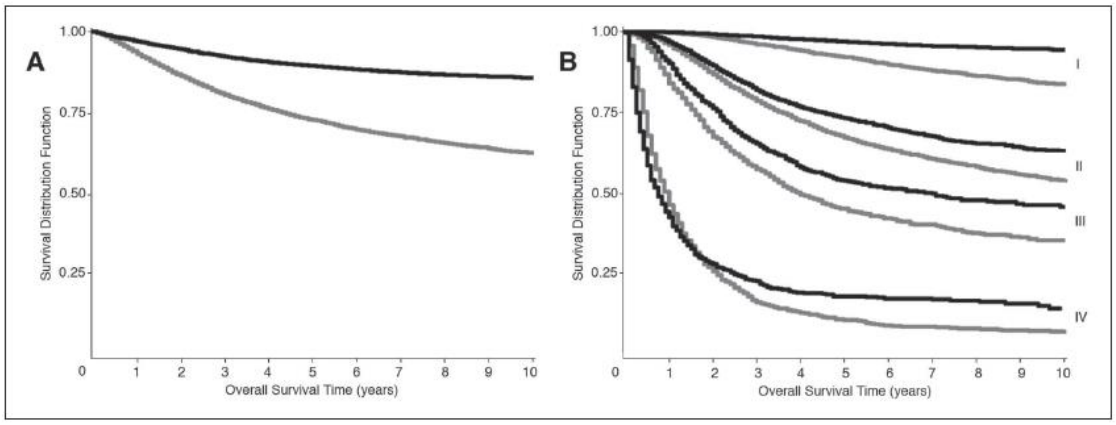

Fig 1. Kaplan-Meier survival curves for time to melanoma-specific death. (A) Overall survival distributions and (B) American Joint Committee on Cancer (AJCC) stage-specific survival distributions for Surveillance, Epidemiology, and End Results cancer registry (black) and AJCC (gray) cohorts.

It would thus make sense that screening could make a significant difference to overall survival in melanoma patients – early stage lesions clearly have a superior outcome.

Why Screening is not the Ultimate Answer

While most melanomas arise in the **skin**, they may also arise from other sites to which neural crest cells migrate, such as rectum, vagina, oesphagus, nasopharynx, iris and oral cavity. Screening these sites is difficult, costly and invasive as does not form part of any evidence based guidelines. It is also important to note that **50%** of cases arise in apparently **normal** areas of the **skin**, and that these lesions are **invasive from the outset**. Screening can only hope to detect such cases at an earlier stage. The remainder of melanomas arise from other **pigmented lesions** such as dyplastic nevi. They often go through a process of increasingly severe dysplasia before ultimate malignant transformation. Screening programs ideally aim to target these lesions and result in their excision prior to malignant degeneration. **Preventative action** is an important arm in patient management.

How to check – The Basic Stuff

The well worn dictum: "*for every mistake made by not knowing, ten are made by not looking*" could not be truer than for melanoma screening. A good clinical history and unhurried examination of any suspicious lesions is critical.

The aetiology of melanoma is multi-factorial with both **genetic** and **environmental factors**. Important points to note on history are a **personal or family history of melanoma**, which confers a 1500-fold and 700-fold increased risk respectively, making this **the single most important risk factor**. A history of a single episode of **blistering sunburn** is sufficient as an environmental risk factor.

On examination, several phenotypic expressions give clues to the underlying genetic risk for a particular patient. **Fair skin and hair colour** are risk factors (red is the most at 3.6X), but interestingly, eye colour has no significance. **Freckling** on exposure to sunlight is associated with 1.9X risk and **more than 20 nevi** is associated with a 3.4X risk. Patient with multiple atypical nevi

(usually more than 50) may have the **atypical mole syndrome** (B-K Mole Syndrome, FAMM Syndrome) which carries a 10% lifetime risk. **Immunocompromised patients** and syndromes with impaired DNA repair mechanisms (such as **Xeroderma Pigmentosa**) place patients at risk. Molecular screening (much like BRCA mutations for breast cancer) may represent a future screening opportunity.

When examining a pigmented lesion the basic clinical approach follows the classically described **ABCD algorithm:**

- **A** = Asymmetrical shape (ie not round or oval)
- **B** = Border irregularities
- **C** = Colour changes (depigmentation or variegated colour)
- **D** = Diameter (>6mm).
- Ulceration or bleeding are later signs and prognostically worse.

Gender differences in presentation exist: Women tend to present with lesions on the extremities while men tend to present more often with central lesions - trunk or head & neck.

How to Check – Dermoscopy

Magnification and epi-luminescent lighting offer an improved view of the lesion and in particular, its edge, which inevitably improves diagnostic accuracy. The advent of **digital photo documentation** is important as it allows accurate comparisons to an earlier time point and the sharing of such photos over the internet for second opinions. **Digital dermoscopy** is presently considered the "gold standard" screening modality for pigmented lesions. **Hand held devices** are now within the financial reach of most practitioners. While there is no substitute for clinical experience, there are numerous books, eBooks and internet courses available on dermoscopy training. One of the most useful tools is a **structured dermoscopy report**, which should be issued with every dermoscopy performed. There are numerous algorithms available to guide diagnosis, but it should be remembered that these are only tools and **clinical judgment** is the final arbitrator.

When to Cut

No melanocytic lesion should be treated with **any destructive modality**, such as cryotherapy, razabrasion, cautery or laser. Melanocytic lesions should always undergo complete full thckness **surgical excision,** with narrow margins to preserve local lymphatic drainage patterns.

There are generally **3 reasons** to excise a pigmented lesion. Firstly, excision may be requested for **aesthetic reasons**, especially on sensitive areas, such as the face. Secondly, excision can be done for **functional reasons**, when a lesion is symptomatic or frequently traumatized by clothing or jewelry. Finally, and most importantly, excision biopsy may be done to **exclude a neoplastic process**. If there is any concern about a lesion, excisional biopsy remains the "gold standard" method to exclude neoplasia.

How Often to Cut

For physicians involved in the screening of melanocytic lesions, an internationally accepted rate of **positive biopsy is 1:5 to 1:10**. If the melanoma diagnostic rate is higher than this, it is recommended to perform more biopsies. If it is lower, it is recommended to improve the quality of the diagnostic screening algorithm.

How to Cut

As a general rule, **excisional biopsy** with **narrow margins (1-2mm)** is indicated for all suspicious lesions. The excision should include the full thickness of the dermis and a limited amount of subcutaneous fat only. The **deep fascia** should **not be breached**. Shave biopsies are not recommended. Incisional or punch biopsies are only acceptable if the lesion is so large that excision

with primary closure is not possible. Even so, such cases should probably be referred to specialist units.

It is critical **NOT** to undertake a resection for adequate margins in the primary setting, as such events may preclude the use of sentinel node mapping and may deny these patients a vital and possibly life saving intervention. Once the diagnosis is secured, referral to a specialist melanoma unit is preferable. A delay of **less than 3 weeks** between biopsy and definitive resection has not been shown to result in poorer prognosis.

Conclusion

Melanoma is a serious diagnosis to present to a patient. As rates are increasing, a high index of suspicion is required. Poor initial management of a suspicious lesion can destroy the opportunity for valuable (and often life saving) diagnostic and therapeutic interventions. Thus, although a **thorough working knowledge of melanoma** is required of all doctors, it is essential to refer such patients to specialist care for any interventions.