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CASE SERIES

The spectrum of spitzoid tumours: A clinical study

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ABSTRACT

This study explores the relationship between different types of spitzoid tumours, spindle cell naevus of Reed and spitzoid melanomas. Clinical and histopathological data were retrospectively reviewed from our hospital database in Cambridge from January 2006 to July 2009. Clinical images, where available, were recorded. Search headings from our pathology database included 'spitzoid tumours', 'Spitz naevi', 'atypical spitzoid tumours', spitzoid tumours of uncertain malignant potential ('STUMP'), 'spindle cell naevus of Reed' and 'spitzoid melanomas'. The total number of spitzoid tumours was 118 comprising Spitz naevi (72), atypical spitzoid tumours (30), spitzoid melanomas (eight), and other naevi with spitzoid features (eight). In total, 60% of Spitz naevi were diagnosed clinically and 50% reported a history of change with spitzoid melanoma, compared with 32% with Spitz naevi. In all, 60% of Spitz naevi and atypical spitzoid tumours were pigmented in contrast with spitzoid melanomas (83%). Variegated pigmentation was found in 20% of Spitz naevi and atypical spitzoid tumours, however, no spitzoid melanomas had mixed pigmentation. There were 30 atypical spitzoid tumours (9 M : 21 F); 16 occurred on the lower limbs, peaking in the 20–30-years age group. There were eight patients with spitzoid melanomas with a 7:1 F : M ratio, 50% of which were diagnosed clinically. Of the 34 spindle cell naevus of Reed (10 M : 24 F), 31 were misdiagnosed, most commonly as melanoma. Reed naevi peaked in the 30–40 year age group and on the upper limbs and lower limbs in the 20–30-years age group. In summary, age and sex appeared helpful in distinguishing benign from malignant spitzoid tumours, however history was less discriminatory. Spitzoid melanomas, most of which were pigmented occurred more commonly in females. Atypical spitzoid tumours were more common in females and pathologists favoured malignancy in this group beyond 20 years of age.

Key words: atypical spitzoid tumour, clinical feature, Spindle cell naevus of Reed, spitz naevus, spitzoid melanoma.

INTRODUCTION

Spitzoid tumours are diverse lesions, sharing histological similarity with the Spitz naevus, a benign, usually acquired melanocytic skin tumour. Spitz naevi may be confused both clinically and histopathologically with melanomas and, indeed, cutaneous melanomas misdiagnosed as Spitz naevi make up a significant number of dermatopathology malpractice claims.[1,2] The terms 'atypical Spitz naevus,' 'atypical spitzoid tumour' and spitzoid tumours of uncertain malignant potential ('STUMP') are all used for these clinically and histologically troublesome lesions. Clark's progression model,[3] which proposes that common acquired naevi progress to dysplastic naevi and then to melanoma, is accepted by many as a model of carcinogenesis in melanocytic tumours. However, this model is not accepted by all, as most cutaneous melanomas are thought to arise de novo.[4,5] Some believe a similar process occurs in spitzoid tumours, whereby the Spitz naevus becomes an atypical spitzoid tumour and finally a melanoma.[6,7] A variant of this spectrum is the spindle cell naevus of Reed, which appears as a black to dark brown papule or plaque usually occurring on the lower limbs of young women.[8] While Reed naevi may clinically and histopathologically be differentiated from a Spitz naevus,[8] spindle cell naevi of Reed are well-known simulators of cutaneous melanoma, which gives rise to diagnostic difficulty. The objective of this study was therefore to review the clinical features of these difficult tumours with the aim of identifying whether their clinical features can help in diagnosis. Although dermoscopy is a valuable diagnostic tool for the dermatologist, we did not incorporate this as part of our study, since the aim was to establish whether

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history and physical examination alone are sufficient to make an accurate diagnosis, which is particularly important for non-specialists.

MATERIALS AND METHODS

A retrospective review was undertaken from January 2006 to July 2009. Data were collected from the centralised hospital pathology database at Cambridge University Hospitals National Health Service Foundation Trust, Cambridge, UK. In order to establish the total number of spitzoid tumours in this 3.5-year period we performed a search using the terms, 'STUMP', 'spitzoid tumours', ' Spitz naevi ', 'atypical spitzoid tumours', 'pigmented (spindle) cell naevus of Reed' and 'spitzoid melanoma'. Further clinical information was obtained from patient records, including the clinical diagnosis at the time of biopsy. Both the use of dermoscopy and the records of findings were incomplete and therefore were not included. All available photographs of the naevi were reviewed.

Spitzoid tumours were broadly categorised by our pathologists into four groups: Spitz naevi, atypical spitzoid tumours, spitzoid malignant melanomas and other naevi with spitzoid features. The latter group included dysplastic, desmoplastic and compound naevi. Spitzoid tumours were deemed to be atypical by our pathologists according to the following criteria: a large size (> 1 cm), asymmetry, deep involvement of the dermis or subcutis, ulceration, numerous dermal mitoses, extensive pagetoid spread and lack of melanocyte maturation.

RESULTS

The total number of spitzoid tumours in the 3.5-year study period was 118: with 43 males (36%) and 75 females (64%). The age of the patients included in the study ranged from 1 to 53 years (mean 23.9 years). The specialties involved in the management of these tumours included dermatology 45 (38%), plastic surgery 47 (40%), general practitioners 25 (21%) and other specialties 1 (1%). The spitzoid tumour types were as follows: Spitz naevi 72 (61%), atypical spitzoid tumours 30 (25%), spitzoid malignant melanomas eight (7%) and other naevi with spitzoid features eight (7%).

Table 1 shows the number of patients reporting on four clinical parameters. Patients' history was recorded where available. The data suggest that clinical information obtained from patients did not appear to help distinguish benign Spitz naevi from spitzoid melanomas, with only 50% of individuals reporting a history of change, as compared to 32% with Spitz naevi. Figure 1 shows the broad variable pattern of clinical presentation of spitzoid tumours. Approximately 60% of Spitz naevi and atypical spitzoid tumours were pigmented in contrast to spitzoid melanomas (83%). While a proportion of Spitz naevi and atypical spitzoid tumours had variegated pigmentation clinically, this did not appear to be the case with spitzoid melanomas

Spitzoid tumours occurred most commonly in the 0–30-years age group, after which there was a gradual decline (Fig. 2). The head and neck was the most common site in the 0–10-years age group and none were seen at this site in patients after the age of 40 years. There was a notable increase on the upper limbs, in a binomial distribution, peaking maximally at the 20–30-year-old age group.

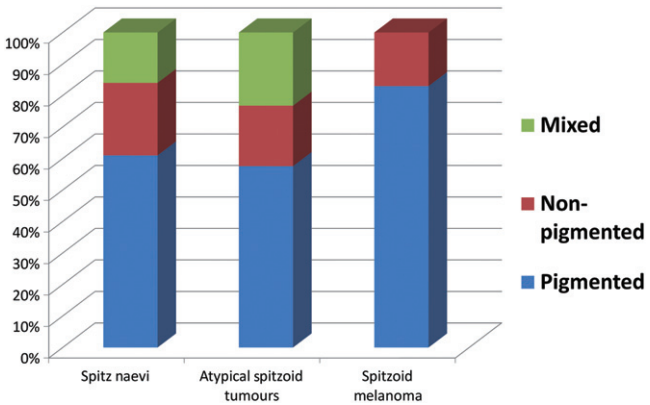

Figure 1 Clinical presentation of spitzoid tumours.

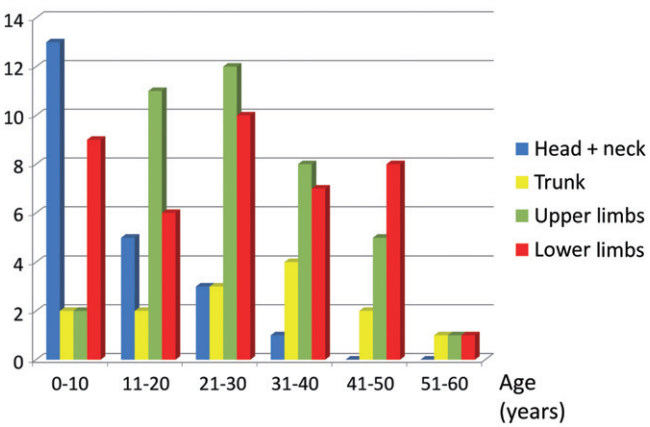

Figure 2 Spitzoid tumours in relation to age and anatomical site.

Table 1 Patients' reported history in relation to tumour type (*n*, %)

Lesion type	History of change	Symptom	Family history of skin cancer	Excess sun exposure
Spitz naevus	14 (32)	5 (11)	1 (2)	4 (9)
Atypical spitzoid tumours	7 (33)	1 (5)	1 (5)	5 (24)
Spitzoid melanoma	3 (50)	0	0	1 (17)

Regarding clinical appearance, pigmented Spitz naevi were located more frequently on the upper and lower limbs; non-pigmented Spitz naevi occurred most commonly on the head and neck in the 0–10-years age group (Table 2). There was a slight increase in variegated pigmented Spitz naevi occurring on the lower limbs in the 0–30-years age group.

The total number of spitzoid lesions diagnosed as atypical were 30 in the 3.5-year period: nine men (30%) and 21 women (70%). Figure 3a shows the breakdown of atypical spitzoid tumours favouring either a benign or a malignant histology in relation to age. It would appear that pathologists favoured a benign histology from the age range 0–20 years, but from the age of 21 years onwards, proportionately more atypical spitzoid tumours were considered more likely to be malignant. Figure 3b shows that atypical spitzoid tumours were generally more common on the lower limbs, especially in the 20–30 year age group.

Of the total number of spitzoid tumours, 100 were benign with 63 occurring in females and 37 in males, giving a 2:1 female to male ratio. In contrast, there were eight cases of spitzoid malignant melanoma in the age range 26–51 years (mean 37 years) with a female to male ratio of 7:1, 50% of which were diagnosed clinically. The Breslow thickness varied from *in situ*–2.2 mm (mean 1.0 mm). Clinical diagnosis at the time of biopsy for all tumours was highly variable among the practitioners managing these lesions and included naevus, Spitz naevus, spindle cell naevus of Reed, melanoma, juvenile xanthogranuloma, pyogenic granuloma and basal cell carcinoma. 60% of Spitz naevi were diagnosed clinically and in 15% of cases, no diagnosis was provided on the biopsy form.

Spindle cell naevus of Reed

While there are differing opinions as to whether the spindle cell naevus of Reed is a distinct entity from the Spitz naevus, most dermatopathologists believe both lesion types to be of the same spectrum. For the purposes of this study, we analysed these lesions separately to ascertain whether there were any differences in Reed naevi from spitzoid tumours in relation to clinical parameters.

Over the 3.5 year period, there were a total of 34 Reed naevi: 10 male patients (34%) and 24 female patients (70%) with an age range 4–61 (mean 32 years). The specialities involved in managing these lesions were as follows: dermatology 26 (76%); plastic surgery four (12%); general practitioners three (9%) and other specialities one (3%). Of the 34 spindle cell naevus of Reed, 31 were misdiagnosed clinically, most commonly as melanoma. The latter was the only differential diagnosis provided at the time of biopsy. History of change, excess sun exposure and sunburn, together with family history did not appear to be helpful in making the diagnosis. There was a gradual increase of Reed naevi peaking in the 30–40 age group; the commonest site being the upper limbs in contrast to the 20–30 age group where Reed naevi were more common on the lower limbs (Fig. 4). There was a demonstrable steep decline of these lesions after the age of 40 years.

Table 2 Spitz naevi in relation to age, anatomical site and clinical features

	Pigmented				Non-pigmented				Mixed				
Age (years)	Head + neck	Trunk	Upper limbs	Lower limbs	Head + neck	Trunk	Upper limbs	Lower limbs	Head + neck	Trunk	Upper limbs	Lower limbs	Total
0–10	5	0	1	4	7	0	0	1	2	1	0	2	23
11–20	3	1	7	2	0	1	0	2	0	0	2	0	18
21–30	1	2	5	2	0	0	0	0	0	0	0	1	11
31–40	0	2	5	2	0	1	2	0	0	1	0	1	14
41–50	0	0	3	2	0	1	0	0	0	0	0	0	6
Total	9	5	21	12	7	3	2	3	2	2	2	4	72

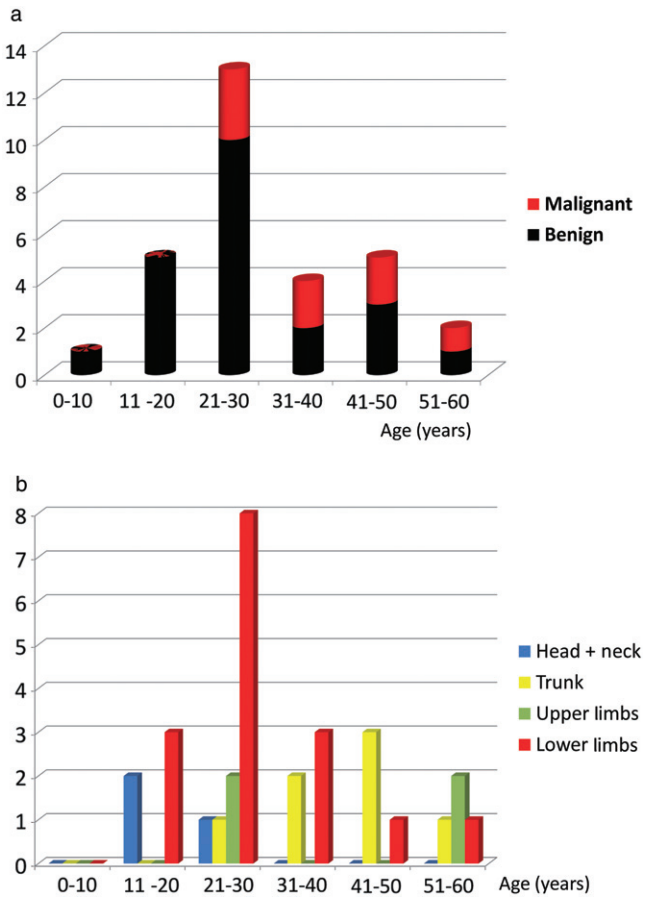

Figure 3 Atypical spitzoid tumours showing (a) favoured benign versus favoured malignant histology in relation to age, (b) age versus anatomical site.

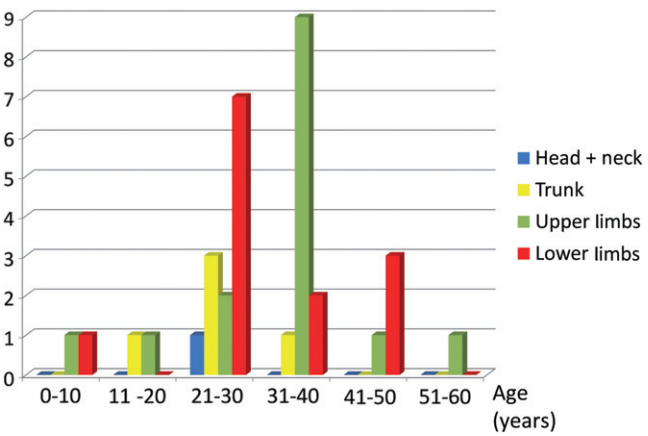

Figure 4 Spindle cell naevus of Reed lesions in relation to age and anatomical site.

DISCUSSION

Melanomas and Spitz naevi are distinct tumours. Recent studies have shown that most so-called atypical spitzoid tumours are probably not different biologically from conventional Spitz naevi.[9] Malignant melanomas are known to be frequently located in sun-exposed areas, such as the back in men and the lower legs in women.[10] The distribution of Spitz naevi has been less well studied, with some reporting the lower legs as the commonest site,[11] in particular the thighs.[12]

Pathologists carefully consider clinical factors when making a pathological diagnosis.[15] The history of the lesion and family history in our study population appeared unhelpful in clinically distinguishing benign from malignant spitzoid tumours. Furthermore, atypical spitzoid tumours were diagnosed most commonly in young women aged 20–30 years, with a malignant histology favoured increasingly after the age of 30. This suggests that age and sex are important factors that pathologists rightly take into account when making a histological diagnosis, or that they are different pathologically. While some hold the view that atypical spitzoid tumours occur in less typical anatomical sites such as the back,[14] our study does not appear to support this view. The lower limbs were the most common site affected, suggesting perhaps environmental factors such as ultraviolet exposure may be relevant in contributing to the atypia seen histologically.

There are some limitations in this study. The numbers of Reed naevi and spitzoid tumours were relatively small, owing partly to the fact that these lesions are relatively uncommon in routine clinical practice. Moreover, clinical images were not always available, especially from primary care and other centres in the region. We therefore relied upon the clinical description of the lesion from clinic letters and pathology request forms. Both the use of dermoscopy and recording of findings were incomplete and were therefore not included. For the aforementioned reasons, any conclusions drawn from this retrospective study are restricted and more meaningful conclusions may be made from a prospective study incorporating a larger number of tumours with complete clinical data.

Our understanding of the biological nature of spitzoid lesions remains inadequate. While there have been advances in molecular pathology, unfortunately, to date, no firm conclusions can be made concerning the pathology of atypical spitzoid tumours and spitzoid melanomas to improve our understanding of spitzoid lesions.[15]

In summary, we have demonstrated that while age and sex proved to be useful in distinguishing benign from malignant spitzoid tumours, both history and clinical features (without dermoscopy) proved less helpful. This was also applicable in distinguishing Reed naevi from cutaneous melanoma. We hope that further studies can help to clarify and categorise these intrinsically difficult and challenging tumours for all who have to deal with them.

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