Risk of Melanoma Development from Giant Congenital Melanocytic Nevi (GCMN) and Psychological Adjustment and Quality of Life in Children and Adolescents with GCMN - An Analysis of Self- and Parent Reports

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Abstract: Giant congenital melanocytic nevi (GCMN) are one of the most frequent skin lesions encountered at birth. They are composed of collections of melanocytes (pigment-forming cells) that show distinct clinical and histopathological features. GCMN may be precursors of melanoma, and it has been suggested that the presence of atypical foci could increase the risk of malignant transformation. Congenital melanocytic nevi occur in approximately 1% of newborns and are usually classified according to their size. Giant congenital melanocytic nevi are most simply defined as melanocytic nevi that are greater than 20 cm in largest dimension; whereas small congenital nevi are defined as melanocytic nevi less than 1.5 cm in largest dimension. Giant congenital melanocytic nevi are associated with an increased risk of the development of melanoma. Giant congenital melanocytic naevus (GCMN) may be expected to affect psychosocial functioning of children and their parents due to deviant appearance and painful treatment.

Keywords: Congenital melanocytic nevus; Malignant transformation; Negative pressure wound therapy; behavior problems; infancy; mental health; psychosocial functioning; quality of life.

1. Objectives

To evaluate the clinical characteristics and risk of melanoma development from GCMN and a study assessed health-related quality of life (HRQOL) and psychological adjustment in children and adolescents affected by giant congenital melanocytic nevi (GCMN) and identified potential predictors of adjustment.

2. Methods

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In order to better define atypical GCMN, we analyzed DNA content and proliferative activity in 21 samples of GCMN, with (n=13) or without (n=8) cytologic atypia. Six benign acquired naevi (AN) and 6 malignant melanoma (MM) were used as controls. DNA content was determined with the CAS 200 image analyzer, and DNA histograms were classified according to the Auer classification. The proliferative indices (PI) were measured after Ki 67 immunostaining using the CAS 200 system. All AN and GCMN without atypia showed class I histograms (normal DNA content) and low PI (mean 1.9 and 2.1). Atypical GCMN showed in 10 cases an abnormal DNA content (class III or IV histograms) with low PI (mean 2.7), and in 3 cases a normal DNA content (class I histograms) with higher PI (mean 16.2). All MM displayed abnormal DNA content and high PI (mean 32.6).

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Participants were recruited worldwide with the help of patient organizations. Data were obtained from parents of 235 children affected by GCMN, aged between 1 month and 18 years (M = 6.3 y; SD = 5.0 y), using a web-based survey. Measures included the Pediatric Quality of Life Inventory TM 4.0 and the Strengths and Difficulties Questionnaire. Sample scores were compared to normative data. Demographic characteristics as well as GCMN-related variables were examined as possible predictors of outcome, using multivariate analyses.

Figure 1, 2, 3: Showing giant congenital melanocytic nevi
3. Results

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Study suggested that melanoma (cutaneous or extracutaneous) develops in approximately 5% of patients with a large (>20 cm) CMN, with about half of this risk in the first few years of life. Melanoma and neurocutaneous melanocytosis (NCM) are most likely in patients with CMN that have a final size of >40 cm in diameter, numerous satellite nevi, and a truncal location. One-third of individuals with NCM have multiple medium-sized (but no large) CMN.

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Parents of children and adolescents born with a GCMN reported significantly lower HRQOL and somewhat higher emotional and behavioral problems compared to community norms. Impairments in HRQOL and psychological adjustment were predicted by lower socioeconomic status, neurological problems, skin-related discomfort (e.g., itch or pain), and perceived stigmatization. The relationship between visibility of the skin lesion and psychological adjustment and psychosocial health was found to be mediated by perceived stigmatization. Social problems were reported for 30% of the patients and behavioral/emotional problems for 25.9%. There was no correlation between visibility of the naevus, treatment or child age and psychological problems. Mothers reported considerable psychosocial burden.

4. Conclusions

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Abnormal DNA content seems to correlate with cytologic atypia in GCMN. Atypical GCMN exhibit an overall pattern of DNA content and cell proliferation intermediate between non-atypical naevi and MM.
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In children and adolescents affected by GCMN, those experiencing neurological problems, skin-related discomfort or high levels of perceived stigmatization are particularly vulnerable for impaired HRQOL and psychological maladjustment. It is concluded that children with GCMN are at increased risk of social and behavioural/emotional problems, and mothers suffer considerable psychological impact of their child’s condition. Identification of stigma experiences and appropriate support may be crucial to enhancing psychological adjustment and quality of life in children with GCMN.

5. Declaration of Conflicting Interest
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References