Review of Recent Evidence on Congenital Melanocytic Naevi Treatment Methods

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Abstract:

These melanomas metastasize and are therefore life-threatening. In this review we cover the background of CMN and particularly treatment approaches. We searched electronic databases as; MEDLINE, Embase, and PubMed for studies discussing the congenital melanocytic naevi treatment approaches, through September, 2018. Congenital nevi exist at birth and result from a proliferation of benign melanocytes in the dermis, epidermis, or both. Although the exact threats for melanoma in patients with CMN are not known, including the included risk resulting from sun direct exposure, all patients and/or family members ought to be advised on sun evasion and sunlight security. Routine evaluations, assisted by photographic documents, may make it possible for very early diagnosis and treatment need to melanoma supervene. The parents and (if suitable) the patient must be informed of the conflict worrying the threat of creating melanoma and should be informed on the expected cosmetic arises from surgical procedure given that several have impractical assumptions that "cosmetic surgery leaves no marks."

Introduction:

Congenital melanocytic naevi (CMN) includes congregations of nevomelanocytes. Congenital melanocytic nevus is typically classified according to its anticipated biggest size in adulthood. Little nevi are up to 1.5 cm, medium are 1.5 to 19.9 cm, and big nevi are those with an estimated diameter of more than 20 cm. Giant nevi are 50 cm or much larger. Although nonsurgical options have actually been supported for the therapy of nevus, such as derma- brasion and laser ablation, these procedures may reduce the burden of nevus cells but do not accomplish total removal of all cells [1]. Consequently, direct excision of the nevus continues to be the mainstay of treatment [1]. There are numerous medical options to cover the skin defect after excision of a nevus [1]. The most basic alternative includes serial excision and direct closure of the defect in stages, while various other alternatives include skin grafting and tissue development [1].

Normal modifications in CMN can be anticipated. These may include changes in dimension, color, hair growth, and topography [2]. Although some alterations are typical, focal modifications need to be seen with care. Focal growths, pigment adjustments, ulceration, and inflammation are all indications that may suggest malignity. All patients with CMN and their parents should be instructed in the strategy of self-skin evaluation, which need to be carried out on a monthly basis. They require to be informed on the warning signs of melanoma consisting of adjustment in shade, size, shape, and signs and symptoms. If an adjustment is noted it ought to be brought to the interest of their specialist [2]. All patients should be advised to stay clear of too much ultraviolet light exposure and to use sunlight safety clothing and sun blocks. Patients with large congenital melanolytic nevi (LCMN), whether excised or not, must be complied with for life with complete skin examinations, evaluation of systems, palpation of lymph nodes, and neurological examinations to look for primary or metastatic melanoma. In addition, the nevus and scars, if any, need to be palpated for the discovery of subcutaneous lumps.

Congenital melanocytic nevi are among several well-known risk elements for the ultimate growth of melanoma. Fortunately, melanoma remains an unusual malignancy in prepubertal youngsters, with a yearly incidence of 0.7 situations per million kids aged 0-9 years. These melanomas metastasize and are therefore life-threatening. In this review we cover the background of CMN and particularly treatment approaches.

Methodology:

We searched electronic databases as; MEDLINE, Embase, and PubMed for studies discussing the congenital melanocytic naevi treatment approaches, through September, 2018. We limited our search to only English studies with human subject.

Discussion:

- **Definition**

Congenital melanocytic nevi are benign proliferations of cutaneous melanocytes that arise as a result of unusual development, growth, or transfer of melanoblasts. Influencing roughly 1% of newborns, congenital melanocytic nevi form among 5 and 24 weeks of pregnancy and are present at birth or become apparent within the first year of life [3]. The appearance of congenital melanocytic nevi differs substantially on the basis of morphology, structure, place, and dimension. The nevi can be round or egg-shaped with smooth, well-defined boundaries, and the

surface structure can be popular, rugose, verrucous, or cerebriform. Congenital melanocytic nevi can be identified from acquired nevi with histological evaluation, as nevomelanocytes of congenital melanocytic nevi are distinct and expand below the surface of the skin, can infect the deep dermis, and can also exist in the subcutaneous fat, fascia, or muscle mass [4]. Although originally a nevus might be light in color, flat, or hairless, it can come to be a lot more pigmented, raised, and obtain long, coarse hairs. While they can occur anywhere on the body, one of the most usual structural location for a large congenital melanocytic nevus is the posterior trunk, complied with by the legs, arms, head, and neck [5].

- **Classification**

Medically, congenital melanocytic nevi are categorized on the basis of their size. Small nevi are typically thought about to be less than 1.5 cm in biggest diameter, medium nevi among 1.5 and 19.9 cm in greatest size, and large or giant congenital melanocytic nevi 20 cm or even more in greatest size [4]. In addition, because the development of these lesions is symmetrical to overall growth, an extra accurate definition of large congenital melanocytic nevi compares the size of the lesion with the complete body surface area; lesions that inhabit 2% or more of body surface area are classified as large nevi. Giant nevi commonly have "showering trunks" and "glove equipping" circulations and can appear with several smaller satellite lesions [6].

The life time threat for malignant change of congenital melanocytic nevi depends largely on dimension. With high irregularity throughout the literature, generally approved percentages towards advancement of melanoma array from 0% to 5% for little congenital melanocytic nevi, with one's threat increasing to approximately 5% to 10% for large congenital melanocytic nevi [7]. When emerging from a bigger lesion, the melanoma is more probable to establish deep right into

the dermal-epidermal junction and may be harder to discover. Because 70% of cancer malignancies creating from huge congenital melanocytic moles happen within the first years of life, early excision of giant congenital melanocytic nevi compared to smaller sized sores is important. Attributes symptomatic of dysplasia or malignant adjustment to melanoma, consisting of accelerated development, ulceration, and adjustments in shade, shape, or nodularity, need to prompt a biopsy of the congenital melanocytic nevus, regardless of the first dimension of the sore [6].

Table 1.Size Definitions for Congenital Melanocytic Nevi (CMN) [8-10].

Size	Definition
Small	A CMN less than 1.5 cm in greatest diameter.
	A CMN that can be completely excised and the defect closed primarily in a single operation.
Medium	A CMN 1.5 to 19.9 in greatest diameter.
	A CMN that can be completely excised, but the resulting surgical defect cannot be closed primarily; e.g., flaps, grafts, or tissue expanders are required.
Large (Giant)	A CMN 20 cm or more in greatest diameter.
	A CMN involving a major part of an anatomical area such as a face or hand.
	A CMN that covers greater than 1% of the cutaneous surface surface. (Greater than 0.5% if on the head and neck).
	A CMN on the head and neck that is at least the size of a palm. CMN in most other anatomical sites need to be at least twice the size of a palm.
	A CMN is 900 cm2 or more in area
	A CMN that covers at least 5% of the body surface area
	A CMN that requires serial or staged excisions for its complete removal

- **Prognosis**

The prognosis for patients with tiny or medium-sized congenital melanocytic nevi is good. Although the danger of developing melanoma in these lesions has not been evaluated, it is normally considered as just moderately higher than that of regular skin. Regardless of the raised danger for melanoma in patients with giant congenital melanocytic nevi, the substantial large number of patients never develop melanoma. Therefore, prognosis continues to be good in these

patients, particularly if the sores are examined frequently for signs of atypia. Diagnosis in cases of symptomatic neurocutaneous melanosis is fairly inadequate.

Congenital nevi, relying on size and location, may have a significant impact on cosmesis. Huge congenital nevi place people at an increased threat for the growth of cancer malignancy at the website of the nevus. For large congenital melanocytic nevi, the danger of developing cancer malignancy has been reported to be as high as 5-7% by age 60 years [11]. One study suggests that the danger of cancer malignancy might be greater in those with large congenital melanocytic nevi with more satellite lesions or a larger diameter, although it is not likely to be so high [12]. Another suggests multiple satellite nevi alone or with connected posterior midline area of large congenital melanocytic nevi is related to raised risk [13]. Additionally, cancer malignancy developing within gigantic congenital nevi may create during childhood and take place much deeper in the tissue where it is harder to detect clinically.

While the general agreement concerning smaller sized nevi is that they posture a better risk for the development of melanoma than regular skin, this risk has actually not been evaluated. Additionally suggested is that melanoma creating within smaller congenital nevi normally takes place at puberty or later on and creates a lot more ostensibly in the skin, where it is much easier to find clinically.

- **Treatment Modalities**

The choice for or against treatment of CMN continues to be controversial. Points that affect this choice consist of size of the nevus, its area, its clinical look, simplicity of medical follow-up, and its malignant capacity. Therefore, the management needs to be tailored for each and every patient; nonetheless, if dynamic therapies are looked for after that the therapy modality picked

ought to preferably resolve the risk of malignant makeover, accomplish satisfying cosmetic outcomes, and preserve sufficient function. Treatment interventions consist of full-thickness excisions, partial-thickness excisions, dermabrasions, curettage, laser treatment, and chemical peels. Improving the aesthetic appearance frequently needs making use of a mix of various treatment interventions. In regards to stopping the growth of melanoma (prophylactic removal), any one of those procedures will certainly decrease the overall number of melanocytes, which in theory should lower the risk of cutaneous melanoma. Nevertheless, with the exception of full-thickness medical excision, these treatments do not appropriately attend to the threat for growing melanoma within the deep dermis or subcutis [14]. Similar to any treatment, the risk and advantages of each therapy modality should be talked about with the patient or guardian. Patients and their families additionally require to be notified of the emotional and cosmetic burden frequently placed on patients with big or numerous smaller CMN. This problem might not be removed by surgery since the marks from surgery might likewise be cosmetically disfiguring, although it appears that a lot of patients or their parents like the scars to the nevus [14].

Surgical Excision

Many little CMN can quickly be excised and the resulting flaw repaired in a fairly easy way. Larger sores require individualization, depending upon their dimension, area, and depth. Serial excisions, tissue expanders, and skin grafts each have a place in the surgical management of LCMN [15]. The advancement of cultured epithelial autografts and biological agents to help injury recovery (eg, Platelet acquired development factor, Keratinocyte development aspect, Epidermal development factor, and cytokines) may eventually permit the excision of bigger locations than would otherwise be possible, causing a decrease in the total number of procedures needed to get rid of very large CMN. As with any treatment, the possible complications included with surgery

need to be thought about, such as infection, bleeding, and threat of general anesthetic. One research, reviewing the risk for developing melanoma, risk of basic anesthetic, and psychosocial aspects, deemed that the best timing for surgical excision is between 6 and 9 months old, or between 8 and 12 years of age [16]. Based on the age groups at highest possible danger for cancer malignancy, prophylactic excision of LCMN should be executed early in life, whereas prophylactic excisions of tiny CMN can be delayed up until later years.

Dermabrasion

Dermabrasion, which displaces the epidermis and part of the dermis, eliminates the superficial nevus cells. Therefore, this procedure might lower the level of pigmentation and increase the aesthetic look. The staying deep dermal and subcutaneous nevus cells are ultimately covered by scar tissue. The postdermabraded skin is normally thinner, extra vulnerable, tender, and has actually decreased hair density [17]. In an attempt to remove as lots of nevus cells as feasible, it has actually been suggested that dermabrasion be performed during infancy. This is based on the fact that dermabrasion ends up being harder as the epidermal and dermal components come to be much more adherent with age and on the belief, held by some, that nevus cells move down right into the deeper layers of the skin in time [18]. Dermabrasion does not sufficiently address the problem of melanoma prevention in the much deeper cells. Nonetheless, some believe that the lowered pigmentation after dermabrasion may allow for less complicated discovery of color modifications a sign of melanoma in the much deeper layers of the CMN [17].

Curettage

Therapy of CMN with curettage includes curetting via a natural cleavage aircraft that separates the extremely nevus populated top dermis from the reasonably less nevus inhabited deeper dermis [19]. Regrettably, this cleavage plane is present only throughout the first couple of weeks of life, hence limiting the time framework within which this procedure can be carried out with sensibly good results and raises the problem of whether the possible cosmetic success of the procedure outweighs the risk of anesthetic at this young age [16]. On the other hand, because curettage of larger CMN can frequently be carried out as a single procedure, it may provide a decrease in operative threat contrasted to numerous serial excisions. When done by experienced drivers, curettage can cause acceptable cosmesis. One research revealed that for non-scalp CMN the useful and cosmetic results from curettage transcended or equal to surgical excision [19]. The postcurettaged dermis is replaced by sclerotic and thick connective tissue. Repigmentation of the scarred skin and the capacity of covering up subcutaneous cancer malignancy establishing from remnant mole cells located in the deep dermis or subcutaneous tissue are negative aspects that have to be considered.

Chemical Peel

Chemical peels with agents such as phenol have been made use of by some to deal with CMN. Deep chemical peels can result in the decrease of the variety of melanocytes and may be an alternative for those lesions that are operatively unresectable and cosmetically injuring [20]. CMN most suitable for treatment by chemical peel are those with lighter pigmentation and those with nevus cells constrained to the epidermis and shallow dermis (Imaging modalities such as ultrasound, magnetic resonance imaging (MRI), or optical coherence tomography may aid in analyzing the deepness of penetration of nevus cells) [20]. Prospective adverse effects of phenol

include cardiac and renal poisoning, which need to be taken into consideration before starting this treatment modality [21].

Laser

Lasers can be used in the treatment of some CMN with many patients needing several laser therapies prior to attaining acceptable cosmetic results. Carbon dioxide (CO2) lasers evaporate tissue resulting in scarring and therefore needs to be considered a surgical procedure akin to dermabrasion [22]. Typically utilized lasers that do not evaporate tissue consist of typical mode ruby, Q-switched ruby, Q-switched alexandrite (755 nm) and Q-switched neodymium: yttrium-aluminum-garnet (Nd: YAG) (532 and 1064 nm) [23]. The Q-switched ruby laser is one of the most popular laser used to treat CMN. The specificity of the Q-switched ruby laser results from its 694 nm wavelength, which is uniquely taken in by melanin [24]. Additionally, the laser generates a 20-nanosecond pulse period that approximates the thermal leisure time for melanosomes, consequently constraining the energy to the targeted cells and resulting in the thermal destruction of melanocytes [24]. Q-switched ruby lasers have lately been shown to lighten CMN that as a result of place, dimension, or deepness of nevomelanocytes were not responsive to medical excision. This type of treatment is appealing because of its low potential for scarring and its ability to lower the pigmentation thus developing the aesthetic end result. Preliminary histological information reveal that treatment with Q-switched lasers can achieve considerable reduction of papillary facial melanocytes leading to reduction of visible pigment. Partial repigmentation, nevertheless, does take place in most patients causing a final pigment clearance of about 50% [25]. The level of pigment clearance and melanocyte destruction can potentially be enhanced by utilizing a combination of various lasers. Similar to various other techniques that get rid of just the upper part of the CMN, the risk of creating melanoma in the deep dermis is not

attended to by laser treatments [25]. On top of that, lightening of CMN might make it difficult to keep an eye on the resultant lesion for signs of deadly makeover [14].

Lasers can additionally be made use of to aid eliminate the hypertrichosis that so generally happens on CMN. Nevertheless, whether lasers are utilized for hair elimination or nevus "elimination" one should consider the possibility of damaging lasting sequelae. Lasers work by applying heat energy to melanocytes and it is currently unidentified whether this heat can be possibly mutagenic [14].

Conclusion:

Congenital nevi exist at birth and result from a proliferation of benign melanocytes in the dermis, epidermis, or both. Although the exact threats for melanoma in patients with CMN are not known, including the included risk resulting from sun direct exposure, all patients and/or family members ought to be advised on sun evasion and sunlight security. Routine evaluations, assisted by photographic documents, may make it possible for very early diagnosis and treatment need to melanoma supervene. The parents and (if suitable) the patient must be informed of the conflict worrying the threat of creating melanoma and should be informed on the expected cosmetic arises from surgical procedure given that several have impractical assumptions that "cosmetic surgery leaves no marks." All prospective therapy modalities consisting of surgical treatment, dermabrasion, curettage, and lasers need to be discussed and their associated threats and benefits outlined. The decision on whether to follow-up medically or to treat the CMN rests on the patient and family members.

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