Table A.1  Classification of cutaneous neural tumors

**Cutaneous peripheral nerve sheath proliferations**
- Hamartomas
  - True neuromas
    - Palisaded encapsulated neuroma/solitary circumscribed neuroma
    - Mucosal neuroma
  - Fibrolipomatous hamartoma of nerve
- Other nonepithelial and hyperplastic proliferations
  - Traumatic neuroma
  - Reparative perineurial hyperplasia
  - Morton’s neuroma (interdigital neuritis)
  - Epithelial sheath neuroma
- Benign neoplasms
  - Neurofibroma
  - Schwannoma
  - Granular cell tumor
  - Nerve sheath myxoma
  - Perineurioma
  - Lipoblastic nerve sheath tumor
- Malignant neoplasms
  - Malignant peripheral nerve sheath tumor
  - Malignant granular cell tumor

**Cutaneous proliferations of putative neural origin/differentiation**
- Benign neoplasms
  - Neurothekeoma
- Malignant neoplasms
  - Primary cutaneous neuroendocrine carcinoma (Merkel cell carcinoma)
  - Neurofollicular hamartoma

**Cutaneous neuroblastic and ganglionic proliferations**
- Benign neoplasms
  - Ganglieneuroma
  - Ganglion cell choristoma
- Malignant neoplasms
  - Neuroblastoma

**Cutaneous glial and meningothelial proliferations**
- Heterotopias
  - Glial heterotopia (nasal glioma)
  - Meningothelial heterotopia/meningocele
- Benign neoplasms
  - Cutaneous meningioma

*The etiologic nature of these entities is disputed or not decidedly established. Neurofibroma is included under the neoplastic group for historical purposes.*
### Table A.2  Main immunohistochemical findings of common cutaneous neural neoplasms

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<tr>
<th>Marker</th>
<th>S-100</th>
<th>Coll IV</th>
<th>NF</th>
<th>NSE</th>
<th>CD57 (Leu-7)</th>
<th>MBP</th>
<th>GFAP</th>
<th>EMA</th>
<th>VIM</th>
<th>SY</th>
<th>CD34</th>
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<td>+/-</td>
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<td>++</td>
<td>-/+</td>
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<th>PS</th>
<th>CNSM</th>
<th>PFHT</th>
<th>PSCN</th>
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<td>Deep dermis or subcutis</td>
<td>Superficial or deep dermis</td>
<td>Superficial or deep dermis</td>
<td>Deep dermis or subcutis</td>
<td>Mid or upper dermis</td>
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<td>Plexiform</td>
<td>Plexiform and multinodular</td>
<td>Lobulated or plexiform</td>
<td>Plexiform and multinodular</td>
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<td>Yes, superficially incomplete</td>
<td>Yes</td>
<td>Yes, superficially incomplete</td>
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<td>Spindle cells: Schwann cells Perineurial cells Fibroblasts</td>
<td>Spindle cells (Schwann cells)</td>
<td>Spindle and stellate cells Giant cells</td>
<td>Fibroblasts Histiocytic cells Giant cells</td>
<td>Spindle cells, some with mucin</td>
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<td>None (if present may indicate malignancy)</td>
<td>Often</td>
<td>Rarely</td>
<td>Rarely</td>
<td>Mild</td>
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<td>None to rare</td>
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<td>None to rare</td>
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<td>None to rare</td>
<td>Frequent</td>
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<td>None</td>
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<td>Frequent</td>
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<td>Nerve fibers</td>
<td>Usually abundant</td>
<td>Rare, scattered</td>
<td>Frequent</td>
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<td>None</td>
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<tr>
<td>Other features</td>
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<td>Focally increased mucin or fibrosis</td>
<td>Predominantly hypercellular</td>
<td>Lymphocytes, abundant mucin</td>
<td>Lymphocytes Microhemorrhages</td>
<td>Periadnexal, perineurial spread</td>
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PPEN plexiform, palisaded, encapsulated neuroma, PNF plexiform neurofibroma, PS plexiform schwannoma, CNSM classical nerve sheath myxoma, PFHT plexiform fibrohistiocytic tumor, PSCN plexiform spindle cell nevus

Adapted with permission from Argenyi ZB. Recent developments in cutaneous neural neoplasms. J Cutan Pathol. 1993;20:97–108
### Table A.4 Immunohistochemical reactivity of small round cell cutaneous tumors

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PNECS primary neuroendocrine carcinoma of the skin, PNET peripheral neuroectodermal tumor, NF neural filaments, AC actin, S-100 S-100 protein, CK cytokeratin, CEA carcinoembryonic antigen, EMA epithelial membrane antigen, LCA leukocyte common antigen, VIM fimentin, CHG chromograninm, SYN synaptophysin, DES desmin, NSE neuron specific enolase, CD99 antibody to p 30/32, *CD99 may not be expressed in primary mature neuroblastomas, + present, − absent, +/− variable present
How to approach a slide with probable neural neoplasm?

Surface Configuration and epidermal changes → Location → Growing pattern → Structure → Cell type → Cell products → Special features

-> Relationship to normal adjacent? structures

-> Evidence of neural differentiation?

- Nerve fascicles
- Sensory end organs
- Schwann cells
- Axons

Synthesis of Information → SPECIFIC DIAGNOSIS

Fig. A.1 How to approach a slide with probable neural neoplasm? (artwork by ZA)
Fig. A.2 An algorithmic approach of the diagnosis of common cutaneous neural neoplasms (artwork by ZA)
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