Combined superficial peroneal nerve and peroneus brevis biopsy is a specific and sensitive diagnostic tool in patients with clinically suspected vasculitic neuropathy

Clinical Problem: A forty year old previously healthy female presents with multifocal signs and symptoms clinically suspicious for vasculitic neuropathy. Electromyography and nerve conduction studies are supportive. Cerebrospinal fluid examination is non-diagnostic.

Clinical Question: Is muscle and nerve biopsy helpful in the diagnosis of vasculitic neuropathy?

The Search: MeSH term “vasculitis” was utilized with in various combinations with MeSH terms: “diagnosis”, “diagnostic test” and “biopsy”; as well as the following keywords “nerve biopsy” and “sural nerve biopsy”. Pubmed returned between 44 and 239 articles for each search. One relevant retrospective study was identified (Collins et al. 2000). A second study was identified but did not specifically address nerve biopsy as a diagnostic tool (Kararizou et al. 2005). Recent reviews of the literature were obtained and bibliographies were examined. One further article was identified in this manner pertaining to diagnostic usefulness of nerve biopsy but not specifically in the setting of vasculitis. Additional searches using SUMSearch yielded no further relevant articles (including National Clearinghouse Database and DARE).

Clinical Bottom Lines:

1. A definite pathologic diagnosis of vasculitis on combined superficial peroneal nerve and peroneus brevis biopsy is useful in the diagnosis of clinically suspected vasculitic neuropathy (specificity=100%, sensitivity=61%).
2. Inclusion of biopsies pathologically diagnosed as suspicious with the definite cases increases sensitivity (86%) but decreases specificity (85%).
3. Inclusion of peroneus brevis muscle in the biopsy contributed to the yield of biopsy, particularly in the setting of systemic vasculitis (diagnosis of vasculitis with negative nerve biopsy in 10% of patients)

The Evidence:

Several potentially relevant studies were identified as described in the search strategy. Collins et al. 2000 was identified as the only relevant study addressing the utility of muscle and/or nerve biopsy in the diagnosis of vasculitic neuropathy. In this retrospective study, patients with suspected peripheral nerve vasculitis (asymmetric or multifocal pattern of involvement or the presence of a systemic illness associated with vasculitis) having undergone combined superficial peroneal nerve and peroneus brevis muscle biopsies at 4 tertiary referral centers were reviewed and results of the histological assessment of the biopsy specimens was correlated with patients’ eventual diagnosis according to clinical criteria. Seventy patients biopsied between 1986 and 1996 were identified and included in this retrospective analysis.
**Data Interpretation:**

Table 1. Calculated specificity, sensitivity, and likelihood ratios as calculated with definite diagnosis of vasculitis on SPN/PBM biopsy.

<table>
<thead>
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<th>Meets Clinical Criteria</th>
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</thead>
<tbody>
<tr>
<td>Positive (Definite)</td>
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<td>0</td>
</tr>
<tr>
<td>Negative</td>
<td>14</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>34</td>
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</tbody>
</table>

Sensitivity = 22/36 = 61%
Specificity = 34/34 = 100%
PPV = 22/22 = 100%

Sensitivity = 31/36 = 86%
Specificity = 23/27 = 85%
PPV = 31/35 = 89%

Table 2. Authors’ calculated specificity, sensitivity, and likelihood ratios as calculated with definite or suspicious diagnosis of vasculitis on SPN/PBM biopsy.

<table>
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<tbody>
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<tr>
<td>Negative</td>
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<td>23</td>
</tr>
<tr>
<td>Total</td>
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<td>27</td>
</tr>
</tbody>
</table>

Sensitivity = 31/36 = 86%
Specificity = 23/27 = 85%
PPV = 31/35 = 89%

Sensitivity = 31/36 = 86%
Specificity = 23/27 = 85%
PPV = 31/35 = 89%

Comments:
1. A trend toward increased yield was noted with greater number of tissue blocks pathologically examined.
2. All patients with systemic vasculitis showed an erythrocyte sedimentation rate of > 75 mm/hour.

References:

Key Words: Vasculitis, biopsy, diagnosis, neuropathy

Appraiser:
Lawrence Korngut, M.D. and the UWO Evidence-Based Neurology Group

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