Primary amyloid tumour of the breast: a case report

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LETTERS TO JCP

A case of primary amyloid tumour of the breast is reported with a brief review of the literature. The tumour was mammographically suspicious of carcinoma. Fine needle aspiration cytology yielded clumps of amorphous material surrounded by giant cells and lymphocytes. Subsequent histology showed nodular amyloid associated with osseous metaplasia and giant cell reaction. There are 13 cases of amyloid tumour of the breast reported in the literature and in four of these fine needle aspiration had been undertaken.

Amyloidosis in the breast was first reported by Fernandez and Hernandez in 1973. Subsequently, several cases have been documented in the literature, including women with bilateral breast involvement. Most of the reported cases were elderly women who had mammographically suspicious lesions. By definition, amyloidosis is extracellular deposition of amorphous congophilic protein within tissues. To date, 15 different protein structures of amyloid have been identified, with AL and AA being the most common. Skin, tongue, the gastrointestinal tract, and the respiratory tract are other sites where primary amyloidosis is commonly reported. As in our case, most of the cytology case reports describe the appreciation of amyloid material in fine needle aspiration preparations only in retrospect.

“By definition, amyloidosis is extracellular deposition of amorphous congophilic protein within tissues"
DISCUSSION

Amyloidosis of the breast can occur as organ specific nodular amyloidosis or as part of systemic amyloidosis. Organ specific nodular amyloidosis has been reported in skin, trachea, bronchi, and the urogenital tract, with breast being the lowest in frequency. To our knowledge, 13 cases of localised breast amyloidosis have been reported (table 1). Of these, our case is the only third to show focl of osteoid metaplasia, the previous ones having been documented by Lynch and Muriarty and by Yokoo and Nakazato. Two patients had bilateral amyloid deposits. In one patient, breast amyloidosis was associated with mucosa associated lymphoid tissue lymphoma. Localised amyloid deposits have been reported in a range of endocrine neoplasms including medullary carcinoma of the thyroid, bronchial carcinoid, phaeochromocytoma, and insulinoma. None of these was present in our case. Similarly, there was no evidence of chronic illness, such as rheumatoid arthritis.

In breast screening units, fine needle aspiration cytology is now a routine tool to distinguish benign and malignant lesions. The cytological findings in amyloid tumour have been reviewed in four cases. As in our patient, the presence of amyloid in the fine needle aspirate was only noticed retrospectively in all these reports.

The AL nature of localised amyloidosis is now thought to be derived from localised plasma cells secreting immunoglobulins; that is, immunocyte derived amyloid.

To date, the histological nature of amyloid has been determined in nine of 13 cases (table 1). Of these, only two had AA amyloid and the remaining cases, including our own, had AL amyloid. The AA amyloid was associated with a carcinoma in one patient and it was thought to be the result of an abnormal immune response in the other.

Most patients with the AL type of amyloid do not have classic multiple myeloma or an overt B cell neoplasm. Such cases have traditionally been classified as primary amyloidosis because their clinical features derive from the effects of amyloid deposition with no other associated disease. The AL nature of localised amyloidosis is now thought to be derived from localised plasma cells secreting immunoglobulins; that is, immunocyte derived amyloid. In our patient, there were many plasma cells containing Russel bodies in the vicinity of the amyloid. Considering the clinical details of our patient the localised breast amyloidosis is probably primary.

In summary, localised breast amyloidosis is a rare entity and can have a diverse aetiology. It occurs in elderly women and is clinically and mammographically suspicious of carcinoma. If breast screening is extended to older age groups, it may be diagnosed more frequently.

Table 1 Amyloid tumour of the breast: case reports to date

<table>
<thead>
<tr>
<th>Author (Ref)</th>
<th>Year</th>
<th>No. of cases</th>
<th>Age</th>
<th>Site</th>
<th>Clinical diagnosis</th>
<th>Cells</th>
<th>Amyloid type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fernandez and Hernandez (1)</td>
<td>1973</td>
<td>1</td>
<td>62</td>
<td>RUO</td>
<td>Cancer</td>
<td>P+L+G</td>
<td>–</td>
</tr>
<tr>
<td>Walker et al (2)</td>
<td>1982</td>
<td>1</td>
<td>55</td>
<td>LUC</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>McMahon et al (3)</td>
<td>1983</td>
<td>1</td>
<td>54</td>
<td>R</td>
<td>Cancer</td>
<td>P+L</td>
<td>AL (κ)</td>
</tr>
<tr>
<td>Lew and Seymour (4)</td>
<td>1985</td>
<td>1</td>
<td>63</td>
<td>RUO</td>
<td>Cancer</td>
<td>P+L</td>
<td>AA</td>
</tr>
<tr>
<td>Silverman et al (6)</td>
<td>1986</td>
<td>2</td>
<td>67</td>
<td>R</td>
<td>Cancer</td>
<td>P+L+G</td>
<td>AL (IgA)</td>
</tr>
<tr>
<td>Cheung et al (5)</td>
<td>1986</td>
<td>1</td>
<td>79</td>
<td>L</td>
<td>Cancer</td>
<td>P+L+G</td>
<td>AL (IgG)</td>
</tr>
<tr>
<td>Santini et al (15)</td>
<td>1992</td>
<td>1</td>
<td>75</td>
<td>L</td>
<td>Breast</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Lynch and Muriarty (11)</td>
<td>1993</td>
<td>1</td>
<td>72</td>
<td>Bi</td>
<td>Cancer</td>
<td>L+G</td>
<td>AL (IgG) (κ)</td>
</tr>
<tr>
<td>Gupta and Dowlie (13)</td>
<td>1996</td>
<td>1</td>
<td>43</td>
<td>L</td>
<td>Cancer</td>
<td>P</td>
<td>AL</td>
</tr>
<tr>
<td>Luo and Rotterdam (7)</td>
<td>1997</td>
<td>1</td>
<td>82</td>
<td>R</td>
<td>Cancer</td>
<td>L+G</td>
<td>AA</td>
</tr>
<tr>
<td>Yokoo and Nakazato (12)</td>
<td>1998</td>
<td>1</td>
<td>76</td>
<td>R</td>
<td>Fibroadenoma</td>
<td>P+G</td>
<td>AL</td>
</tr>
<tr>
<td>Gupta et al (14)</td>
<td>2000</td>
<td>1</td>
<td>64</td>
<td>L</td>
<td>Cancer</td>
<td>P+L+G</td>
<td>P component</td>
</tr>
<tr>
<td>Deolekar et al</td>
<td>2002</td>
<td>1</td>
<td>86</td>
<td>L</td>
<td>Cancer</td>
<td>P+L</td>
<td>AL</td>
</tr>
</tbody>
</table>

Site: Bi, bilateral; L, left; LUO, left upper quadrant; R, right; RUO, right upper quadrant. Cells: G, giant cells; L, lymphocytes; P, plasma cells.

Take home messages

- We report a case of amyloidosis localised to the breast
- This is a rare entity that can have a diverse aetiology
- This lesion occurs mostly in elderly women and is clinically and mammographically suspicious of carcinoma
- If breast screening is extended to older age groups, it may be diagnosed more frequently.

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