CASE REPORT

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# Amyloid Tumor of Breast in Multiple Sclerosis Patient

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**ABSTRACT** Amyloidosis is characterized by the extracellular accumulation of abnormal fibrillar proteins in various tissue and organs of the body. Systemic or localized involvement can be seen in various organs, often depending on the underlying disease such as plasma cell myeloma or chronic inflammatory and autoimmune diseases. Amyloid deposition in the breast is rare and may present similar appearance to areas of fat necrosis with fibroelastotic stromal changes in the breast. The amyloid tumor in the breast presented in a 49-year-old female patient diagnosed with multiple sclerosis is a good example of this. Therefore, since amyloid deposition in the breast is an entity that should be kept in mind, the case was deemed worth presenting.

**Keywords:** AA amyloidosis; breast diseases; multiple sclerosis



Amyloidosis is a disease with a wide clinical distribution, characterized by extracellular accumulation of abnormal fibrillary proteins in various tissues and organs of the body.[1] Systemic or localized involvement can be seen in various organs, especially in organs such as kidney, gastrointestinal tract, tongue, skin and larynx, depending on underlying disease such as plasma cell myeloma or chronic inflammatory and autoimmune diseases.[2,3] Amyloid deposition in the breast is rare and may show similar appearance to areas of fibroelastotic stromal changes and fat necrosis in the breast. For this reason, the case was found worthy to be presented because amyloid deposition in the breast is an entity that should be kept in mind.

## CASE REPORT

In the bilateral breast ultrasound examination of a 49-year-old female patient who was diagnosed with multiple sclerosis seven years ago; A solid lesion measuring 4.9x3.9x3.7 cm with macrolobule contours and coarse calcification was detected in the right breast. In the inferior of this lesion, a 1.6x1 cm echo identical to the fat tissue and a natural component similar to the first lesion was observed. No lesions or masses other than millimetric cysts were observed in the ultrasound examination of the left breast. In the microscopic examination of the tru-cut biopsy material of the lesion in the right breast, an amorphous eosinophilic amyloid deposition reminiscent of hyalization was observed entirely in the stroma and between the fat lobules in the core biopsies. Then, in the macroscopic examination of the excisional biopsy material: Three masses, the largest measuring 4.1x3.6x2.9 cm, the second 2 cm and the third 1.2 cm in diameter, were observed. The lesions were similar, well circumscribed, solid, yellowish in color and waxy in appearance (Figure 1). In microscopic ex-

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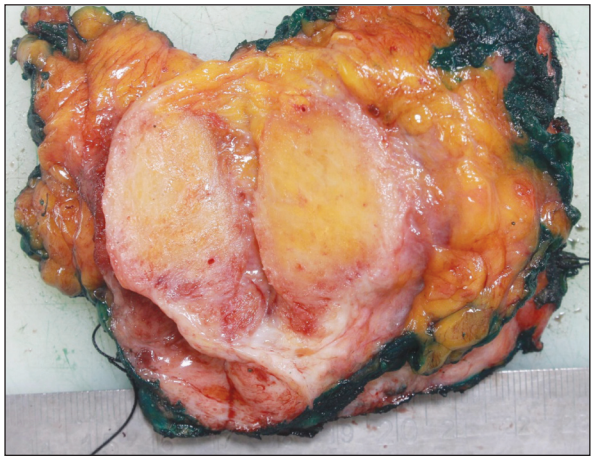

**FIGURE 1:** In macroscopic examination; The cut surface of the lesion was well-circumscribed, solid, yellowish in color and waxy in appearance.

amination; In the stroma, eosinophilic, amorphous material accumulation resembling fat necrosis was observed between perilobular and periductal areas and fat lobules. Mild plasma cells and lymphocyte infiltration were observed in some of the lobules (Figure 2). It was observed that these deposits were stained in the color of brick with Congo red and gave an apple green reflection in polarized light (Figure 3A), and weak positivity was detected with Amyloid A immunohistochemical staining (Figure 3B). Perilobular inflammatory cell infiltration contained both CD3 and BCL2 positive small T lymphocytes and CD20 positive small B lymphocytes. Mixed staining was also observed in CD38 and CD138 positive plasma cells by Kappa and Lambda silver *in situ* hybridization (ISH) (Figure 4). With these findings, the patient was diagnosed with amyloid tumor in the right breast. No primary malignancy was observed accompanying amyloid deposits in the breast. There were only fibrocystic changes and ductal hyperplasia findings in the breast parenchyma. In addition, a monoclonal cell population was not observed with immunohistochemical stains and ISH applied to the perilobular chronic inflammatory cell infiltration to exclude the involvement of a hematological and lymphoid neoplasia in the breast that could cause amyloid deposits. Informed consent was obtained from the case.

## DISCUSSION

Amyloid deposition in the breast is rare and was first described in 1973.[4] In addition, amyloid deposition



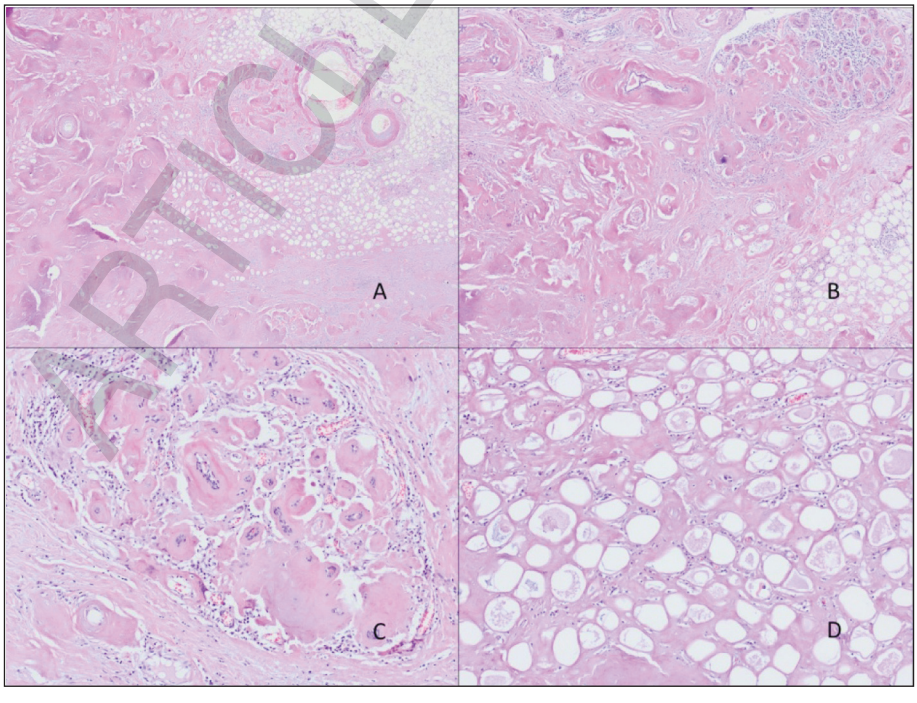


**FIGURE 1: A, B:** Accumulation of periductal and perilobular eosinophilic amorphous material in the stroma (H&E, x20). **C:** Perilobular accumulation and mild infiltration of plasma cells and lymphocytes around the lobules (H&E, x40). **D:** Eosinophilic, amorphous material accumulation resembling fat necrosis between fat lobules (H&E, x40).

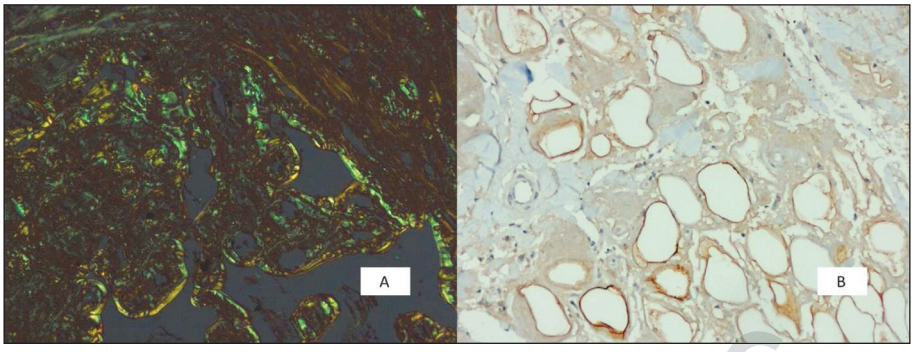


**FIGURE 3: A:** These accumulations with Congo red gave an apple green reflection in polarized light; **B:** Pale, weakly positive staining with amyloid A immunohistochemical stain (DAB, x200).

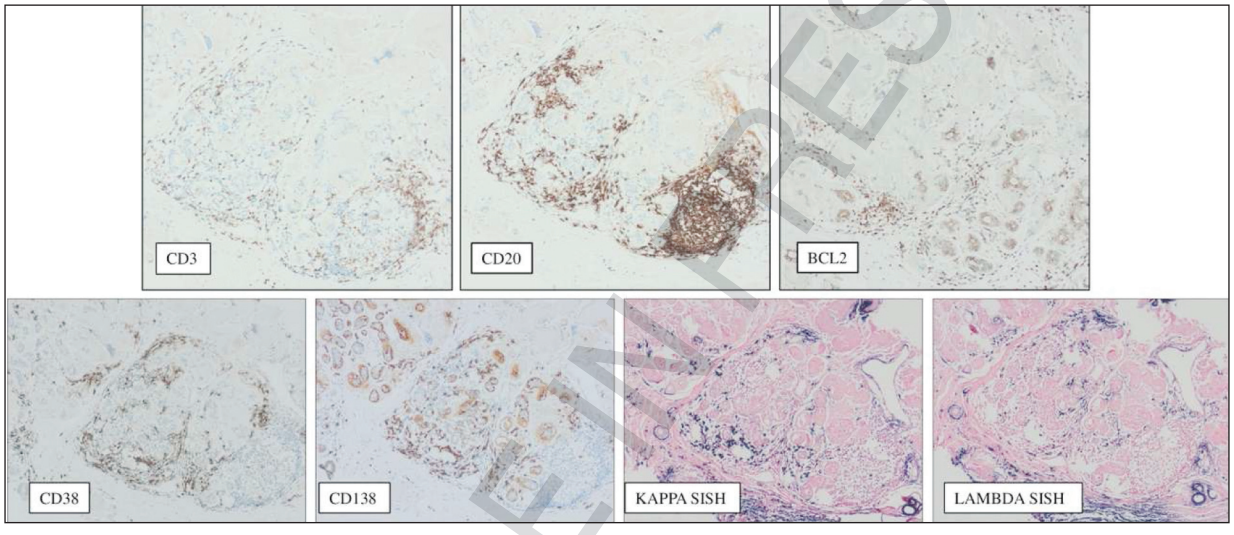


**FIGURE 4:** : Perilobular CD3 positive T lymphocytes and CD20 positive B lymphocytes. BCL2 immunohistochemical stain was positive for T lymphocytes, similar to CD3. Mixed staining of perilobular plasma cells stained with CD38 and CD138 immunohistochemical stain (DAB, x100) with Kappa in situ hybridization and Lambda in situ hybridization.



in the breast is important in that it can show non-specific clinical and radiological findings and inconspicuous histopathological features. Although benign histopathological findings are observed in the breast in most cases in the literature, there are also cases accompanied by lymphoma and epithelial malignancies in the breast.[4] In a series of 32 cases published by Duckworth et al., in most of the cases (57%) no neoplastic lesions were observed in the breast, while 39% of the cases were diagnosed with lymphoma and 4% with invasive lobular carcinoma at the same time. As in our case, mass and microcalcification were observed clinically and radiologically in 14 of the cases.[5] In cases where these findings are observed radiologically, biopsy is performed to exclude malignancy. In another large series of 40 breast amyloidosis cases by Said et al., hematological malignancies, mostly MALT lymphomas, were found in 55% of the cases. In addition to localized amyloid deposition, extramamarian amyloid deposition was also observed in the cases. In most of the cases, amyloid deposition was shown to be AL (light chain) type by immunohistochemical method and/or more specific liquid chromatography tandem mass spectrometry. Notably, they did not detect AA type amyloid deposition, which is the second most common form of systemic amyloidosis, in any of the cases.[6] In most of the cases in the literature, besides being accompanied by hema-

tological malignancy, cases of amyloid deposition in the breast accompanied by different morphologies such as tubulo-lobular carcinoma, invasive ductal carcinoma, pleomorphic lobular carcinoma and ductal carcinoma *in situ* have been reported.[6-10] Even more rarely, there are publications reporting localized amyloid deposition in the breast due to chronic inflammatory diseases such as the case with Sjögren's syndrome published by Fischer and the patient with CREST syndrome presented by Herrero et al.[11,12] In addition, localized amyloid deposition in the breast, which has a history of implantation with silicone gel in the bilateral breast 30 years ago and is thought to develop due to chronic inflammation, is also included in the literature.[13] As reported in publications, all cases with amyloid deposition in the breast should be investigated in terms of hematological malignancies, plasma cell dyscrasias, and chronic inflammatory and autoimmune diseases that may cause systemic amyloid deposition. In this respect, a wide screening such as serum and urine protein electrophoresis and bone marrow biopsy is recommended. In our case with multiple sclerosis, an inflammatory demyelinating disease in the history, detailed anamnesis, serum and urine tests did not reveal any other disease that could cause amyloid deposition. No neoplastic formation was observed in the breast parenchyma either. As a result of all these findings, it was thought that tumoral amyloid deposition in the breast might be due to multiple sclerosis. Our presented case is also valuable in terms of AA type amyloid deposition in the breast, which is associated with multiple sclerosis and is reported to a lesser extent in the literature.

In conclusion, the awareness of the pathologist is very important in detecting amyloid deposits in the breast and reaching the correct diagnosis. This also guides the investigation of cases in terms of systemic diseases that may cause amyloid deposition.


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*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*


### *Conflict of Interest*

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### *Authorship Contributions*

***Idea/Concept:*** *Hanife Seda Mavili, Ali Rıza Kandiloğlu;* ***Design:*** *Hanife Seda Mavili;* ***Control/Supervision:*** *Hanife Seda Mavili, Ali Rıza Kandiloğlu;* ***Data Collection and/or Processing:*** *Hanife Seda Mavili, Ömer Atmış;* ***Analysis and/or Interpretation:*** *Hanife Seda Mavili;* ***Literature Review:*** *Hanife Seda Mavili, Ömer Atmış, Semra Tutçu Şahin;* ***Writing the Article:*** *Hanife Seda Mavili;* ***Critical Review:*** *Hanife Seda Mavili, Ali Rıza Kandiloğlu, İhsan Şebnem Örgüç;* ***Materials:*** *Semra Tutçu Şahin, İhsan Şebnem Örgüç.*



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