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Isolated nodular amyloidosis of the breast associated with monoclonal gamapathy (IgG) – Case report

Izolirana nodularna amiloidoza dojke udružena s monoklonalnom gamapatijom (IgG) – Prikaz slučaja

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Summary

Amyloidosis is an abnormal deposition of insoluble amyloid proteins in extracellular spaces. Protein deposits are components of immunoglobulins produced by plasma cells and B–lymphocytes in response to antigenic stimulation. Three different forms of systemic amyloidosis can be distinguished, those are primary (AL), secondary (AA) and family form. Localized amyloidosis occurs in the pancreas in type 2 diabetic patients and in patients on chronic hemodialysis.

Amyloidosis of the breast is a rare entity, mostly involving elderly women, and may be misdiagnosed as carcinoma on mammography.

A 70 years old woman presented with monoclonal IgG gamapathy, hydronephrosis, acute renal insufficiency and suspicious lesion in the breast on ultrasound. Mammography revealed a lobulated, ill demarcated area without visible microcalcifications.

Key words: amyloidosis, breast, monoclonal IgG gamapathy

Sažetak

Amiloidoza je bolest nakupljanja netopivih proteina amiloida u ekstracelularnom prostoru. Nakupljeni proteini su imunoglobulinski spojevi koje proizvode plazma stanice i B-limfociti stimulirani antigenom. Razlikujmo tri sistemska oblika amiloidoze: primarna (AL), sekundarna (AA) i obiteljska. Lokalizirana amilodoza javlja se u gušterači kod dijabetičara tipa 2, te kod bolesnika na kroničnoj dijalizi.

Amiloidoza dojke je rijedak entitet i obično se javlja kod starijih žena. Pojavljuje se kao nakupljanje ili amiloidni tumor ili u sklopu sistemskih bolesti, a često se mamografski dijagnosticira kao karcinom.

Prikazat ćemo slučaj 70-godišnje bolesnice s monoklonalnom IgG gamapatijom, te pridruženom hidronefrozom i akutnom bubrežnom insuficijencijom kod koje je ultrazvučni nalaz ukazivao na zloćudni tumor dojke, a mamografski nalaz prikazao je lobulirano, neoštro ograničeno područje, bez vidljivih mikrokalcifikata.

Ključne riječi: amiloidoza, dojka, monoklonalna IgG gamapatija

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Introduction

Amyloidosis is an abnormal deposition of insoluble amyloid proteins in extracellular spaces. Protein deposits are components of immunoglobulins produced by plasma cells and B–lymphocytes in response to antigenic stimulation. Amyloid extracellular protein deposits have common morphological properties and affinities for specific dyes with a characteristic appearance under polarized light.

Amyloidosis of the breast is a rare entity, mosty involving elderly women, and may be misdiagnosed as carcinoma on mammography.

Case report

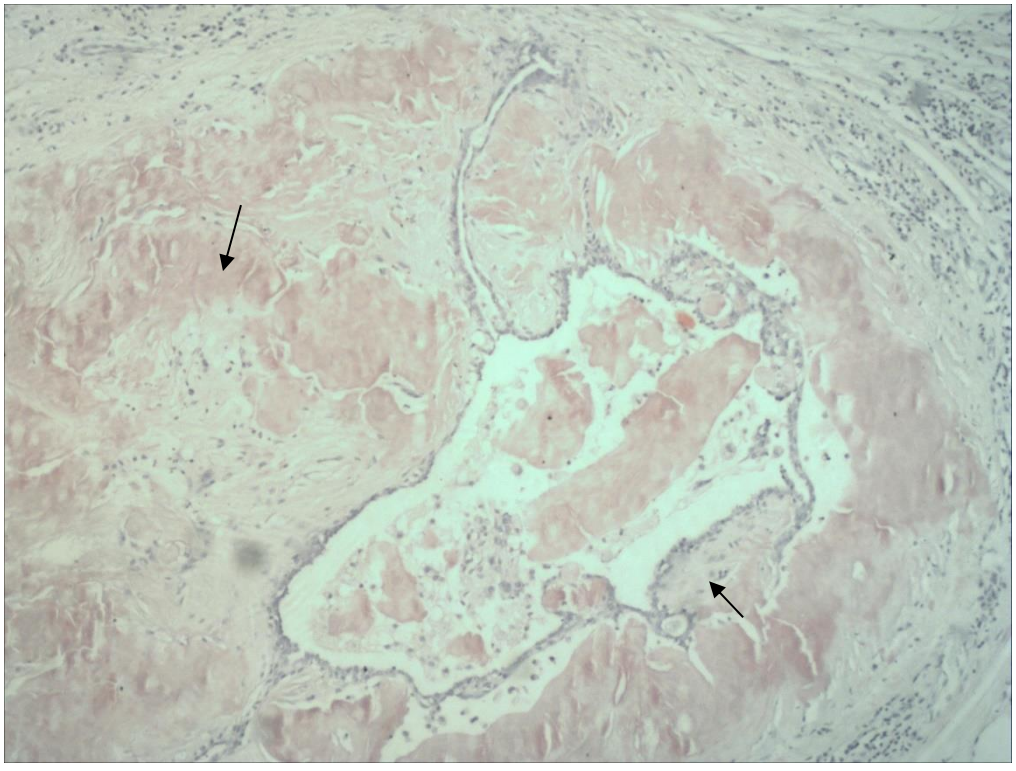
A 70-year-old woman presented with monoclonal gamapathy IgG, hydronephrosis and acute renal insufficiency. Hemodialysis was performed. Immunological findings showed high levels of β2-microglobulin (10.3 mg/L) and IgG (23.5 g/L). Urine Bence Jones free kappa and lambda light chains of immunoglobulins were positive. Bone marrow cytology and flow cytometry did not show malignant plasma cells. The patient was treated with dexa-methasone.

The breast ultrasound revealed an ill demarcated lesion measuring 15 mm in diameter in the right outer quadrant with enlarged axillary lymph nodes. Mammography showed lobular, ill demarcated lesions without calcification.

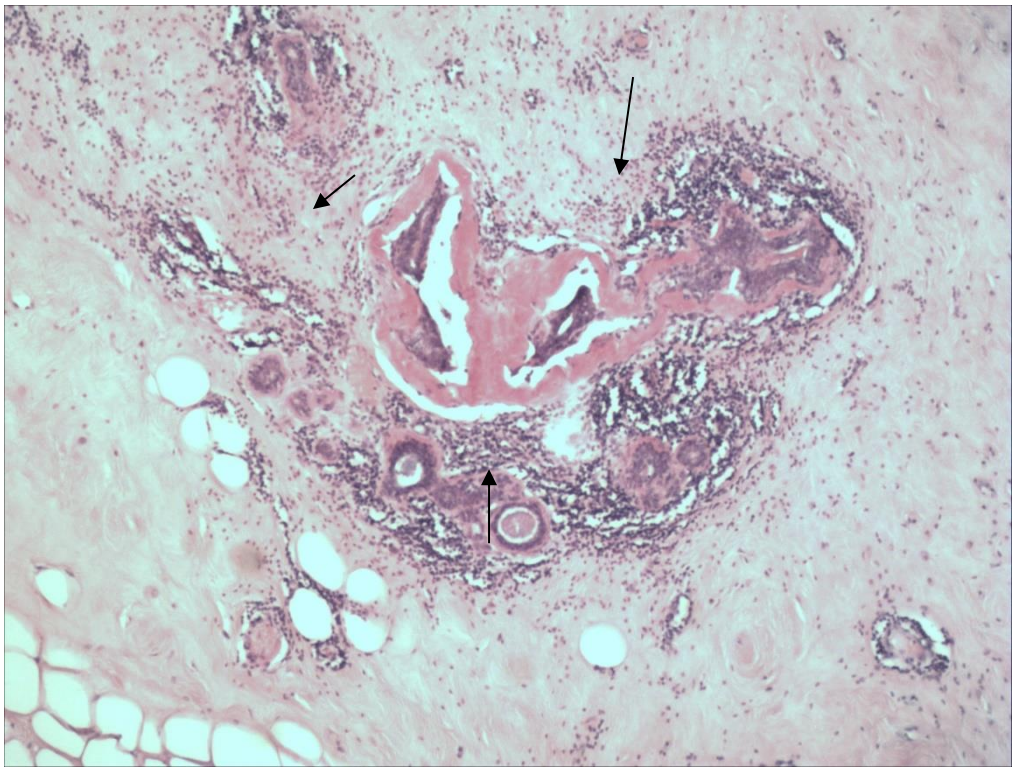
Fine needle aspiration showed single atypical epithelial cell, papillary structures and clumps of amorphous material. Fine needle aspiration of the lymph nodes was not positive for malignant cell. MSCT of chest, abdomen and skeleton did not reveal any suspicious lesion including lymph node enlargement or osteolytic lesions.

The lesion was surgically removed and two samples about 5 and 6 cm in diameter were sent to the pathology. Excised mass was firm whitish tumour, which was also found on resection margins. The specimens were fixed in 10% formalin and embedded in paraffin. Histological examination showed reduced breast tissue and deposits of the amorphous eosinophilic material in adipose tissue, in the wall of the blood vessels and around atrophic lobules and ducts (Picture 1). The stroma around the lobules and ducts was infiltrated with lymphocytes, plasma cells and multinucleated giant cells (Picture 2).

The deposits of the amyloid were Congo red positive with apple green dichroism under polarised light.



Picture 1 Periductal accumulation of amyloid (hemalaun- eosin, 40x)
Slika 1. Periduktalno nakupljanje amiloida (hemalaun- eosin, 40x)



Picture 2 Lymphocytic lobulitis (hemalaun- eosin, 20x)
Slika 2. Limfocitni lobulitis (hemalaun- eosin, 20x)

Discussion

Amyloid belongs to a group of diverse extracellular protein deposits that have common morphological properties and affinities for specific dyes with a characteristic appearance under polarized light. Amyloid accumulates as the native proteins or as aggregates of transformed proteins that form a rigid fibrils size of 10-15 nm in diameter and have common properties as insolubility, resistance to protease and the ability to bind the specific dye (Congo).

Amyloidosis is divided into systemic or localized according to the distribution of amyloid and acquired or hereditary. Patients with dialysis-dependent chronic renal failure may develope β2-microglobulin amyloid deposition. β2-microglobulin is precursor of amyloid and it is part of a chain of the major histocompatibility complex class I molecule and is expressed in all nucleated cells. β2-microglobulin is filtered at the glomerulus, and proximal tubular cells reabsorbed and catabolized β2-microglobulin. β2-microglobulin amyloidosis was first described in 1980 in patients who had been on hemodialysis for several years.[1]

Individual cases of the secondary breast amyloidosis as a part of the malignant lymphoma, and nodular deposits of the amyloid in the lung and breast that mimic breast carcinoma with pulmonary metastasis have been documented.[2] In some cases amyloidosis of the breast has been associated with monoclonal gamapathy and sclerosing lymphocytic lobulitis, but in some cases the amyloidosis of the breast coexisted with primary ductal and lobular carcinoma of the breast.[3]

Amyloidosis of the breast was first reported by Fernandez and Hernandez 1973, and after that, several cases of the breast amyloidosis have been documented in the literature.[4] Amyloid deposit in the breast can be isolated as „amyloid tumour“ without primary disease or as „secundary amyloid tumour“ coexisting with chronic infection or neoplastic diseases. In all cases mammography report demonstrated suspicious neoplastic lesions.[6,7]

Isolated amyloidosis of the breast is rare and an unusual diagnosis. Patients with breast amyloidosis are typically without clinical symptoms, with the first findings often noted on mammography or ultrasound. It affects elderly women, as uni or bilateral palpable mass, sometimes with calcification and may be clinically and mammography misinterpreted as carcinoma.[5-14]

Conclusion

Localised breast amyloidosis is a rare entity and can have diverse etiology. It occurs in elderly women. Our case serves as a reminder to clinicians and mammographers that isolated primary amyloidosis may be mistaken for carcinoma and should be taken into consideration in patients with dialysis-dependent chronic renal failure. When limited to the breast, amyloidosis has proven to be a benign diagnosis.

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