Diagnosis of Amyloidosis by Reexamination of Past Thyroidectomy Tissue Biopsy Specimen in a Nephrotic Syndrome Patient

Tiroidektomili Bir Hastada Gelişen Nefrotik Sendromun Tiroidektomi Materyalinin Amiloidoz Yönünden Tekrar İncelenmesi ile Tanı Alması

ABSTRACT

Amyloidosis is a disorder characterized by accumulation of B sheet misfolded proteinosis, amorph material at extracellular matrix. Amyloidosis is a serious disease that can cause mortality and severe morbidity with organ involvement especially kidney, heart, nerve, and spleen. Amyloidosis must be kept in mind particularly when multiorgan involvement occurs. In our case 1.5 months later after thyroid operation, our patient admitted with oedema, creatinine, blood urea nitrogen elevation and massive proteinurea. We suspected nephrotic syndrome and in his past thyroidectomy specimen reexamination amyloid aggregation was detected. It is an interesting case because of AA secondary type of amyloidosis involvement in thyroid tissue is rare and being diagnosed from past thyroidectomy specimen staining instead of making new organ tissue biopsies.

KEY WORDS: Amyloidosis, Nephrotic syndrome, Proteinuria, Thyroid amyloidosis

ÖZ

Amiloidoz vücuttaki birçok organ ve dokuda ekstrasellüler alanda B kıvrımlı tabaka yapısı oluşturan amorf, proteinöz yapıda materyal birikimi ile karakterize bir hastalıktır. Amiloidoz başta kalp, böbrek, dalak, ve sinir gibi bir çok organ ve doku tutulumu ile birlikte mortalite ve önemli morbiditelere neden olabilen ciddi bir hastalıktır. Amiloidoz özellikle birden çok organ tutulumu tespit edildiğinde her zaman tanı olarak düşünülmeli ve uygun bir dokudan biyopsi materyalinin patolojik incelemesi yapılmalıdır. Olgumuz bir buçuk ay önce tiroid operasyonu sonrası ciddi ödemleri sebebiyle doktora başvuran kan üre azotu ve kreatinin yükselmesiyle birlikte masif proteinüri saptanmasıyla nefrotik sendrom düşünülen ve yapılmış olan tiroidektomi biyopsi materyalinde amiloid depolanması tespit edilen bir hastadır. AA tipi sekonder amiloidin tiroid tutulumu olması ve tanının tiroid biyopsi materyalinden konması ile sık görülen dokular dışında da görülebilmesi açısından ilginç bir olgudur.

ANAHTAR SÖZCÜKLER: Amiloidozis, Nefrotik sendrom, Proteinüri, Troid amiloidozis

Fatih TAŞTEKİN[1]
Garip ŞAHİN[2]

1 Osmangazi University Faculty of Medicine, Department of Internal Medicine, Eskişehir, Turkey
2 Osmangazi University Faculty of Medicine, Department of Nephrology, Eskişehir, Turkey

INTRODUCTION

Amyloidosis is a disease characterized by the accumulation of amorphous, proteinaceous material structure that make up a B curved layer in the extracellular space of many organs and tissues in the body. Amyloidosis is serious and important entities that lead to death by multi-organ involvement. Involvement in many organs and tissues can be seen primarily at heart, kidney, spleen and nerve (1). Amyloidosis should always be kept in mind as a diagnosis especially if a patient has multiple organ involvement and the pathological examination of biopsy material should be appropriately stained if suspected (2). In this writing we present a case that diagnosed amyloidosis from past thyroidectomy specimen tissue staining instead of making new biopsy in a patient with nephrotic syndrome.

Received : 31.10.2014
Accepted : 07.02.2015

Correspondence Address:
Fatih TAŞTEKİN
Eskişehir Osmangazi Üniversitesi
Tıp Fakültesi, İç Hastalıkları AD,
Eskişehir, Turkey
Phone : +90 543 310 88 70
E-mail : fatihtastekin@gmail.com

CASE REPORT

61 years old patient followed with hypertension, diabetes mellitus, benign prostate hyperplasia, bronchitis and undergone thyroidectomy operation 1.5 month ago admitted to our hospital with azotemia, elevated creatinine levels and proteinuria. In his laboratory examination creatinine:4.7mg/dl, blood urea nitrogen:97mg/dl and proteinuria:9 gr/day, antinuclear antibody was negative, C3:104 mg/dl (90-180) C4:29.3mg/dl (10-40), total protein:4.4 g/dl, albumin:1.6 g/dl, Na:132 mEq/L, K:4.33 mEq/L, Ca:7.1 mg/dl, P:8.58 mg/dl, Total cholestrol:365 mg/dl, LDL cholesterol:280 mg/dl, triglyceride: 259mg/dl was detected. In his 2 months before examinations creatinine: 1.5mg/dl, blood urea nitrogen: 47mg/dl, albumin: 3.2 g/dl was detected. The microscopic examination of urine was normal. He was hospitalized with nephrotic syndrome. In his Echocardiography examination pericardial effusion was seen and ejection fraction was detected %60. Hemodialysis was performed. Due to albumin globulin ratio changes protein electrophoresis was performed and seen compatible with nephrotic syndrome. His eye examination was not convenient for hypertensive and diabetic retinopathy. In his laboratory, TSH: 30uıU/ml, freeT3:1.35, freeT4:1.09 was detected. He was taking 100mcg levothyroxine and in his following his levothyroxine dose is increased. In his renal USG: right kidney 120mm, left kidney 130mm, increased renal echogenicity as grade 2, pelvicalyceal system was normal detected. We decided to make kidney biopsy but instead of making kidney biopsy, his past thyroidectomy specimen stained for amyloidosis and conformed to AA amyloidosis. Nephrotic syndrome related with amyloidosis was thought and his medication was given. He is followed with hemodialysis three times a week.

DISCUSSION

Amyloidosis is a disease that causes accumulation of fibrillar protein with B curved layer in the extracellular space of tissues and leads to organ dysfunction. Amyloid fibrils contain different proteins but they have a common secondary structure as a B fold formation and all amyloid deposits have Pentraxin serum amyloid P stem and glucoseaminoglycans. A large number of proteinaceous infrastructures (over 20) that cause amyloid has been found (1). Amyloid detection in biopsy specimens lead to diagnosis. When amyloid is stained with hematoxylin eosine, it seems as pink and if stained with crystal violet it appears metachromatical and it reflects green highlights under polarized light with congo red. Type of amyloidosis differs based on protein subunits of protein fibrils of a tissue and pathologic process. This includes A1 primary amyloidosis, AA secondary amyloidosis, familial amyloidosis and B2-microglobulin amyloidosis (2).

Circulating serum amyloid A proteins are accumulated in tissues as amyloid fibrils, blood serum amyloid A levels initially increase in plasma and this high levels maintain for a long time and develop disease. This is a multistep procedure. Serum amyloid A protein is secreted as an acute-phase reactant by the transcriptional control of liver IL1 and IL6. After the formation of an amyloid precursor, when added, other amyloid fibrils are composed (1).

Clinically, amyloidosis involvement can be seen in many organs and tissues. The most commons are heart, kidney, spleen, and peripheral nerve involvements. Amyloid goitre, as our case, is seen in 0.04% of primary systemic amyloidosis (3). Glomerular proteinuria is the initial stage in most cases. Symptomatic and anatomical dysfunction and cardiac involvement are often late clinical symptoms. Microalbuminuria, creatinine clearance and cystatin C methods are used in the calculation for an early diagnosis and follow-up. The most widely used method to detect subclinical AA amiloid is to examine fat (lipid) needle biopsy specimens. Gastrointestinal biopsies and other organ involvement biopsies are also used in diagnosis (4). As our case, tissue specimen examination for amyloidosis can be made from patients past taken biopsies to prevent complications of new tissue biopsies.

Systemic AA amyloidosis may occur as a complication of severe chronic inflammatory diseases such as rheumatoid arthritis, ankylosing spondylitis, auto inflammatory syndromes (e.g. Crohn's disease), malignancies and recurrent infections. In our case bronshitis may be the cause of amyloidosis. Organ damage develops by deposition of proteolytic fragments of acute-phase reactant serum amyloid A (SAA) in the form of amyloid fibrils in extracellular spaces. If left untreated, end-stage renal disease develops quickly. Prognosis of the disease is poor. However, development of amyloidosis in some patients with long-term chronic inflammation indicates the presence of disease-modifying factors and it is known that the effect of genotype SAA1 is an important one (1). Amyloidosis is a life-threatening disease and should be paid attention for treatment and prevention of this disease. New treatment strategies will be established by better understanding of amyloid formation and molecular basis of regression.

If the period of inflammatory process is known, a close follow-up is significant for prognosis. Studies have shown the median survival of 133 months after diagnosis. An increase in the amount of SAA affects prognosis poorly (5). Heart failure is the main cause of death. Especially after the initiation of dialysis, sudden deaths get increased. Among the other causes of death gastrointestinal bleeding, perforation and infections are common. Treatment of the underlying disease and the strong suppression of inflammatory events are the main aspects of treatment. After the development of organ damage, lack of response to treatment leads to poor prognosis. Strategies that target different segments of amiloidogenic cascade should be developed. Studies on eprosidate as a treatment option still maintain. Eprosidat is a protein which is negatively charged by sulfonomid, and prevents the interaction of glucose aminoglycans and SSA matrix that

cause misfolding and aggregation (6). Amyloid guatr is seen rarely. Our case is a rare one. In our literature examination similar some cases were found (6-8). Studies and trials on new drugs will be going on.

CONCLUSION

Amyloidosis is a severe disease that increases the rates of mortality and morbidity by involvement of many organs and tissues, particularly heart, kidneys, spleen, and nerves, Amyloidosis should be considered as a diagnosis in the cases of multiple organ involvement. It's an important case because amyloid deposition at thyroid tissue is seen rarely and during making the diagnosis of AA amyloidosis at this case, instead of making renal or other tissue biopsy we stained the patient's past thyroidectomy specimen for AA amyloidosis. At nephrotic syndrome patient if the diagnosis is thought amyloidosis reexamination of past tissue biopsies prevented complications of new deep tissue biopsy.

REFERENCES

1. Obici L, Merlini G: AA amyloidosis: Basic knowledge, unmet needs and future treatments. Swiss Med Wkly 2012;142:w13580
2. Goldman-Ausiello: Cecil Medicine (24rd ed). Chapter 194. Philadelphia: Elsevier, 2012;1243-1245
3. Baker KR, Rice L: The amyloidoses: clinical features, diagnosis and treatment. Methodist Debakey Cardiovasc J 2012;8:3-7
4. Lachmann HJ, Goodman HJ, Gilbertson JA, Gallimore JR, Sabin CA, Gillmore JD, Hawkins PN: Natural history and outcome in systemic AA amyloidosis. N Engl J Med 2007;356:2361-2371
5. Rumjon A, Coats T, Javaid MM: Review of eprodisate for the treatment of renal disease in AA amyloidosis. Int J Nephrol Renovasc Dis 2012;5:37-43
6. Sethi Y, Gulati A, Singh I, Rao S, Singh N: Amyloid goiter: A case of primary thyroid amyloid disease. Laryngoscope 2011;121:961-964
7. Pai K, Ramachandra L, Susmitha MS, Suresh BP: Amyloid Goiter: A case of primary thyroid amyloid disease. The Internet Journal of Surgery 2009;22:1-4
8. Aparna C, Renuka IV, Saila Bala G,Vijayasri M: Primary amyloid goitre. International Journal of Otolaryngology and Head & Neck Surgery 2014:3; 29-31