Magnetna rezonancija srca – vrijedna dijagnostička metoda za procjenu amiloidoze srca

Cardiac magnetic resonance imaging: important diagnostic tool in the evaluation of cardiac amyloidosis

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Amiloidoza je karakterizirana odlaganjem netopljivih proteinskih vlakana u intersticiju mnogih organa. Biopsija predstavlja zlatni standard za postavljanje dijagnoze: vlakna amiloida boje se Congo red-om zeleno pod polariziranim svjetlom mikroskopa. Poznato je više oblika amiloidoze: primarna amiloidoza, familijarna amiloidoza, ATTR (karakterizirana stvaranjem nestabilnog serumskog proteina transretina), senilna sistemska amiloidoza i rekativna amiloidoza. Promjene na srcu mogu se vidjeti u gotovo svim ovim oblicima, iako se najčešće nalaze u primarnoj amiloidozi koja je povezana s multiplim mijelomom kao što ćemo prikazati u slučaju našeg bolesnika.

Dijagnoza se postavlja temeljem kliničke slike, laboratorijskih pretraga, elektrokardiograma, kao i neinvazivnih slikovnih metoda što sve vodi kliničkoj sumnji na postojanje bolesti. Ehokardiografija je slikovna metoda prvog izbora, ali u posljednje vrijeme magnetna rezonancija (MR) se pojavljuje kao vrijedna dijagnostička metoda u bolesnika sa sumnjom na amiloidozu srca, s obzirom na to se postkontrastnim sekvencama može prikazati tkivna karakterizacija. MR koristeći *steady-state free precession* sekvence vizualizira morfologiju, strukturu i funkciju srca, a može prikazati i perikardijalni i pleuralni izljev koji su često pridruženi nalaz kod ovih bolesnika. U cilju prikaza neophodno je primijeniti gadolinijski kontrast, jer se kelati gadolinija nakupljaju u intersticijskom prostoru (koji je u ovih bolesnika izražen usljed nakupljanja amiloida), što dovodi do pojačanog signala u tkivima s nataloženim amiloidom. U razdoblju nakon apliciranja gadolinijskog kontrasta pri različitim TI bilježi se tipična dinamika prikaza tkiva zahvaćenog amiloidom.

Amyloidosis is a group of diseases caused by the deposition of insoluble fibrillar proteinaceous material in the interstitial space of various organs. Biopsy and histological analysis are the diagnostic gold standard: amyloid fibrils bind Congo red stain, yielding apple-green birefringence under cross-polarized light microscopy. There are several forms of amyloidosis: primary amyloidosis, familial amyloidosis, ATTR amylodosis (production of the unstabile serum protein transthyretin), senile systemic amyloidosis and reactive systemic amyloidosis. Although cardiac involvement is seen with the most forms of amyloidosis, it is most common in patients with primary amyloidosis. Primary amyloidosis is also associated with multiple myeloma, as it is shown in our case report.

Patient's clinical features, laboratory testing and electrocardiogram, as well as noninvasive imaging methods, can aid in recognizing patients with amyloidosis. Echocardiography is usually the first cardiac imaging test performed, but cardiac magnetic resonance imaging (MRI) is emerging as a first line modality in patients with suspected cardiac amyloidosis due to its ability to characterize the myocardial tissue, especially on the post-contrast myocardial delayed enhancement sequences. MRI uses steady-state free precession sequences which allows visualization of cardiac morphology, structure and function as well as identification of pericardial and pleural effusions, which may occur as accompanying findings. In order to achieve this goal and to achieve the signal enhancement, intravenous administration of gadolinium contrast is necessary, because gadolinium chelates are distributed within the extracellular space expanded by amyloid infiltration. Shortly after intravenous administration of gadolinium contrast, patients with cardiac amyloidosis have a faster gadolinium clearance from the blood pool, marked by a blood T1 value over time, that was higher than that in controls.

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