Mehanika atrijskih aurikula i površina ušća gornje šuplje vene utvrđene 3D transezofagijskom ehokardiografijom u predviđanju recidiva fibrilacije atrija nakon izolacije plućnih vena

Mechanics of atrial appendages and superior vena cava area assessed by transesophageal echocardiography in prediction of atrial fibrillation recurrence after pulmonary vein isolation

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Uvod: Izolacija plućnih vena (PVI) je često korištena metoda liječenja paroksizmalne fibrilacije atrija (PAF). Međutim, recidiv fibrilacije atrija (AFR) prilično je čest nakon inicijalne PVI. Iako postoje brojne studije u kojima su utvrđeni prediktori AFR-a, uključujući različite ehokardiografske parametre, podaci o mehanici atrijskih aurikula i gornjoj šupljoj veni (SVC) su oskudni.[1-3] Stoga je cilj ove studije bio utvrditi mehaniku lijeve (LAA) i desne aurikule (RAA) te SVC-a utvrđenih 3D transezofagijskom ehokardiografijom (TEE) i istražiti njihovu vrijednost u predviđanju PAF nakon PVI.

Bolesnici i metode: Proveli smo unicentrično, nerandomizirano, kohortno istraživanje. Uzastopni pacijenti s PAF koji su podvrgnuti PVI proceduri su uključeni u prospektivni bolnički registar. Transtorakalna ehokardiografija (TTE) i 3D TEE su učinjeni prije PVI i pohranjeni radi dodatne, standardizirane analize uključujući: LAA deformacijsku studiju, LAA brzinu pražnjenja utvrđenu tkivnim Dopplerom (TDI), površinu LAA, površinu ušća SVC te RAA TDI brzinu pražnjenja. Primarni ishod je bio recidiv atrijske aritmije trajanja > 30 sekundi. Uključeno je ukupno 55 bolesnika s PAF-om, kojima su učinjeni TTE i 3D TEE prije inicijalne PVI (medijan dobi 59 godina, IQR 52-63; žene 30%; BMI 27,9 ±4,3 kg/m^2, LVEF 60%, LA volumen indeks 34 ml/m^2). Nakon medijana praćenja od 12 (IQR 10-12) mjeseci, 15 pacijenata imalo je AFR (R-skupina), a 40 pacijenata nije imalo recidiv (NR-skupina). U usporedbi s NR-grupom, bolesnici u R-skupini imali su niži LAA TDI brzinu pražnjenja (9,53 ±1,54 vs. 10,56 ±1,68 cm/s, p= 0,014) i površinu LAA (2,55 ± 0,62 vs. 2,84 ± 0,66 cm^2, p= 0,045). No, RAA TDI brzina pražnjenja (p = 0,292) i površina ušća SVC (p = 0,361) nisu se razlikovali između ispitanih skupina.

Zaključak: 3D TEE parametri DAA i gornje šuplje vene se nisu razlikovali u bolesnika s i bez recidiva fibrilacije atrija nakon izolacije plućnih vena. Međutim, LAA TDI brzina pražnjenja i površina LAA mogu biti korisni u kliničkom praćenju bolesnika s PAF-om nakon inicijalne PVI. Prema našim saznanjima, ovo je prvo istraživanje koje je procjenjivalo RAA mehaniku i površinu SVC-a u predviđanju recidiva fibrilacije atrija nakon PVI.

Introduction: Pulmonary vein isolation (PVI) by catheter ablation is well established for the treatment of paroxysmal atrial fibrillation (PAF). However, atrial fibrillation recurrence (AFR) is fairly common after the index PVI. Although there are numerous studies reflecting the AFR predictive factors, including different echocardiography parameters, data on appendages' mechanics and superior vena cava's area is rather scarce.[1-3] Hence, this study aimed to assess left (LAA) and right atrial appendage (RAA) mechanics by transesophageal echocardiography (TEE) and to explore its value in prediction of PAF after PVI.

Patients and Methods: We conducted a single-centre, non-randomized, prospective cohort study. Consecutive patients undergoing AF ablation by means of pulmonary vein isolation were included in a prospective registry. Transthoracic echocardiogram (TTE) and 3D TEE were obtained prior to the ablation procedure, and analyzed offline in a standardized manner, including LAA strain, LAA strain rate, LAA tissue Doppler imaging (TDI) velocity, LAA surface area, SVC surface area, RAA TDI velocity. The primary end point was freedom from any documented recurrence of atrial arrhythmia lasting > 30 seconds. A total of 55 patients with PAF in whom TTE and 3D TEE prior to index PVI was done were included (median age 59 years; IQR 52-63; female 30%; BMI 27.9±4.3 kg/m^2, LVEF 60%, LA volume index 34 mL/m^2). After a median follow up of 12 (IQR 10-12) months, 15 patients had AFR (R-group) and 40 patients had no recurrence (NR-group). Compared to NR-group, patients in R-group had lower LAA TDI (9.53±1.54 vs. 10.56±1.68 cm/s, p=0.014) and LAA surface area (2.55±0.62 vs. 2.84±0.66 cm^2, p=0.045). RAA TDI velocity (p=0.292) and SVC surface area (p=0.361) were not different between the study groups.

Conclusion: TEE parameters of RAA and SVC did not differ between patients with and without AFR. However, LAA TDI emptying velocity and LAA surface area could be useful in follow-up of PAF patients after index PVI in clinical settings. To our knowledge, this is the first study assessing RAA' mechanics and SVC surface area in predicting AFR after PVI.

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LITERATURE

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