Redukcija doze zračenja kod ablacije fibrilacije atrija drugom generacijom kriobalona – 3D rotacijska angiografija kao prijeproceduralna metoda oslikavanja

X ray dosage reduction in the setting of second generation cryoballoon ablation – 3d rotational angiography for preprocedural imaging before atrial fibrillation ablation

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Oslikavanje lijevog atrija (LA) kompjuterskom tomografijom ili magnetskom rezonancom prije ablacije fibrilacije atrija (FA) smanjuje dužinu trajanja procedure[1]. Rotacijska angiografija (RA) omogućuje rekonstrukciju LA neposredno prije samog postupka, ali se najmanje koristi u kliničkoj praksi.

Učinjena je retrospektivna analiza podataka prikupljenih od početka provođenja krioablacije FA u Kliničkom bolničkom centru Zagreb. Na početku programa ablacije FA redovito je korištena 3D rotacijska angiografija, no kasnije je prije proceduralno oslikavanje LA u potpunosti napušteno. Za ablaciju je korišten kriobalon od 28 mm putem jedne transeptalne punkcije te je provođena strategija jednostrukog zamrzavanja od 180 sekundi. Cilj ove studije bio je usporediti karakteristike procedura i ishode ablacije u dvije skupine bolesnika. U prvoj skupini postupak je učinjen pomoću rotacijske angiografije (RA), dok je u drugoj skupini ablacija učinjena bez prethodnog oslikavanja LA (non-RA). Analizirali smo 117 uzastopnih postupaka ablacije kriobalonom, 67 u RA skupini i 50 u non-RA skupini (74,3% muškaraca; 56,9 ± 11,2 godina). Paroksizmalna FA bila je prisutna u 78,6% bolesnika, a ostali su bolovali od rane perzistentne FA. Srednja ejekcijska frakcija lijeve klijetke bila je 60,7 ± 7,1%, a srednji promjer LA bio je 42,5 ± 5,6 mm. Srednje vrijeme procedure bilo je znatno kraće u non-RA skupini (77,5 ± 30,45 min) nego u RA skupini (125,3 ± 40,8 min) (p <0,001). Srednja vremena fluoroskopije također su kraća u non-RA skupini (12,9 ± 7,9 min) nego u RA skupini (22,3 ± 10,6 min) (p <0,001). Nadalje, ukupne doze zračenja i utrošak kontrasta također su bili značajno niži u non-RA skupini. Doza zračenja bila je 1005,2 ± 850 mGy nasuprot 355,9 ± 421,5 mGy (p<0,001), a utrošak kontrasta bio je 190,1 ± 32,5 mL, odnosno 85,2 ± 22,1 mL za RA i non-RA grupu. Nije bilo značajnih razlika u stopama uspjeha i komplikacija među skupinama. U našoj skupini bolesnika, upotreba RA značajno produžuje vrijeme procedure, izloženost zračenju i utrošak kontrasta. Na bolje rezultate u drugoj skupini imalo je sigurno utjecaj i rastuće iskustvo operatera. Prije proceduralno oslikavanje lijevog atrija nije obvezno za uspješnu proceduru ablacije FA, ali može biti korisno neiskusnim operaterima ili centrima s niskim volumenom.

Integration of left atrium (LA) images obtained by computer tomography or magnetic resonance reduces atrial fibrillation (AF) ablation procedural time because it enables a more accurate reconstruction of the anatomy[1]. Rotational angiography (RA) enables reconstruction of LA immediately before the procedure, but it is the least used method of LA imaging.

Data included in our analysis was retrospectively collected from the start of AF ablation program in the University Hospital Centre Zagreb. In the beginning AF ablation program, 3D rotational angiography was utilized to depict LA anatomy and later on, we stopped using preprocedural imaging completely. A28 mm balloon was used via single transeptal puncture and a single 180 seconds freeze strategy was employed. We sought to compare procedural characteristics and outcomes of cryoballon ablation procedures done with the help of rotational angiography (RA arm) versus ablations performed without preprocedural imaging (non-RA). We have analyzed 117 successional second generation cryoballon procedures, 67 in RA group and 50 in non-RA group (74.3% male, 56.9±11.2 years). Paroxysmal AF was present in 78.6% of patients and early persistent in the rest. Mean left ventricle ejection fraction was 60.7±7.1% and mean left atrium diameter was 42.5±5.6 mm. The mean procedure times were significantly shorter for non-RA group (77.5±30.45 min) than RA group (125.3±40.8 min) (p <0.001). The mean fluoroscopy times was also shorter for non-RA group (12.9±7.9 min) than RA group (22.3±10.6 min) (p<0.001). Furthermore X –ray dosage and contrast expenditure were also significantly lower in non-RA group. X ray dosage was 1005.2±850 mGy vs 355.9±421.5 mGy (p <0.001) and contrast expenditure was 190.1±32.5 mL vs 85.2±22.1 mL for RA and nonRA group respectively. There were no significant differences in success rates and complications between groups. In our patient cohort, the use of rotational angiography significantly prolonged procedure times, X ray exposure and contrast expenditure. Superior procedural characteristic could be partly affected by growing operator's experience. Omitting left atrium imaging did not influence the procedure safety and success rates. Preprocedural imaging is not mandatory for successful PVI but it may be useful to inexperienced operators and or in low volume centers.

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LITERATURE

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