Intralipid rescues the heart against sudden cardiac arrest in female mice

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*Sudden cardiac arrest* accounts for 300 000 to 400 000 *deaths* annually in united states both in men and women. Cardiac arrest could be due to abnormally slow heart rate known as bradycardia. Bradycardia is a catastrophic event which is associated with significant mortality and morbidity. Intralipid, an emulsion of soy bean oil,egg yolk phospholipids and glycerol, has been shown to protect the heart against ischemia/reperfusion injury as well as Bupivacaine induced cardiotoxicity. Here we examined whether intralipid can protects the heart against bradycardia in female mice. Wild type female mice C57/Bl6 (2-4 month old) were anesthetized by isoflurane after heparinization. The heart was removed immediately and placed in cold Krebs–Henseleit buffer. The aorta was cannulated and the isolated heart (Langendorff) was perfused with Krebs–Henseleit at 37°C for 15 min for stabilization. Xylazine (100-300 mg) was directly applied to the heart surface for 1-2 min until bradycardia was achieved. The heart was then perfused with either Krebs-Henseleit (KH) solution (control group), or 1% ILP (intralipid group). Hemodynamic parameters and heart rates were recorded with a catheter directly inserted into left ventricle. The heart rates at the baseline before inducing bradycardia was similar in both groups (~230 beats/min, n=5 mice). The left ventricular pressures were also similar in both groups before inducing bradycardia (70 mmHg). Administration of Xylazine decreased the heart rate significantly to ~70 beats/min and left ventricular pressure to ~20 mmHg. Perfusion of the heart with intralipid rapidly restored the heart rate and left ventricular pressure to their baseline values within 1 min. In the hearts that received Krebs–Henseleit after bradycardia, the heart rate and left ventricular pressure were significantly lower than intralipid group. In conclusion Intralipid has the ability to rapidly reverses bradycardia in female mice.