

Indiana-ACC Poster Competition Abstract

Do **NOT** write outside the boxes. Any text or images outside the boxes **will** be deleted.

Do **NOT** alter this form by deleting parts of it (including this text) or adding new boxes.

Please structure your clinical research abstract using the following headings: * Background * Objective * Methods * Results (if relevant) * Conclusion

Please structure your case study abstract using the following headings: * Introduction/objective * Case presentation * Discussion * Conclusion

Title:

Skin Nerve Activities and Cardiac Arrhythmias in Patients Recovering From Open Heart Surgery

Abstract: (Your abstract must use Normal style and must fit into the box. You may not alter the size of this)

Background: In dogs, skin nerve activities (SKNA) are strongly correlated with cardiac sympathetic nerve activities recorded from the stellate ganglion and associated with spontaneous ventricular arrhythmias.

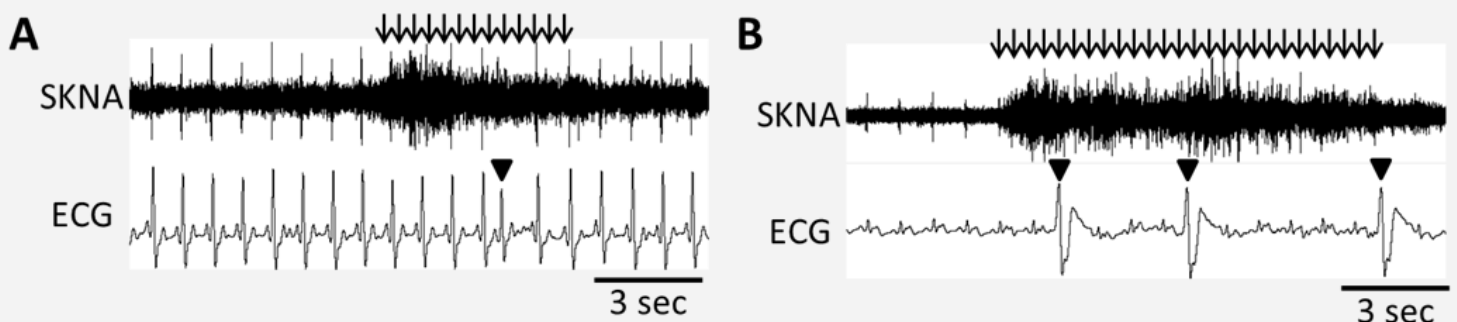
Objective: To test if SKNA are associated with cardiac arrhythmias in humans.

Methods: Nine patients (mean age 57, 95% confidence interval, CI 48-66; 3 female) undergoing open heart surgery consented for this study. With conventional electrocardiography (ECG) lead, the signals were continuously recorded for up to 3 days after surgery and digitized at high sampling rate (10 KHz). The signals were then high-pass filtered at 100 Hz to display SKNA and band-passed filtered (0.5-100 Hz) to display surface ECG. Nerve activities were considered present if there was a 3-fold increase in the amplitude over baseline noise.

Results: We processed 1615 min of recording per patient (95% CI, 930-2300). A total of 1148 episodes of premature atrial contractions were identified. Of these, 167 episodes (14.5%) were preceded by SKNA. As shown in Figure 1A, a premature atrial contraction (downward arrowhead) was preceded by SKNA (downward arrows). In comparison, among 1148 control time segments (3 min prior to each episode), only 67 (5.8%) were preceded by SKNA ($P<0.0001$). There were also 1638 episodes of premature ventricular contractions identified. Two hundred (12.2%) of these were preceded by SKNA, compared to 147 control time segments (9.0%) that were preceded by SKNA ($P=0.003$). Figure 1B shows an example of three episodes of premature ventricular contractions (downward arrowheads) were preceded by SKNA (downward arrows). The absence of SKNA had very high specificity (94.4%) for predicting subsequent occurrence of cardiac arrhythmias.

Conclusions: There is a significant association between SKNA and subsequent premature atrial and ventricular contractions in patients recovering from open heart surgery. This non-invasive measurement may be useful in cardiac arrhythmia prediction and risk stratification.

Figure 1



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