

MCOT clinical publications

Peer-reviewed published clinical studies validating the efficacy and value of MCOT

MCOT

First experience with a mobile cardiac outpatient telemetry (MCOT) system for the diagnosis and management of cardiac arrhythmia

Authors

Ajay K. Joshi, MD, Peter R. Kowey, MD, Eric N. Prystowsky, MD, David G. Benditt, MD, David S. Cannom, MD, Craig M. Pratt, MD, Anna McNamara, RN, and Robert M. Sangrigoli, MD.

Source

American Journal of Cardiology
(April 1, 2005; 95:878-881)

Study results

- Retrospective analysis of the first 100 patients monitored on MCOT.
 - 34% of patients required treatment intervention.
 - 12% required surgical procedure (5 pacemakers, 4 ablations, 2 ICD implants).
 - 1/3 of all patients had prior testing with an event or Holter.
- MCOT finds arrhythmias that other modalities have failed to capture, and is a clinically useful, first-line tool for diagnosis and management of patients with suspected arrhythmias.

The diagnosis of cardiac arrhythmias:

A prospective multi-center randomized study comparing mobile cardiac outpatient telemetry versus standard loop event monitoring

Authors

Steven A. Rothman, M.D.,* James C. Laughlin, M.D.,* Jonathan Seltzer, M.D.,*,†Jasjit S. Walia, M.B.B.S.,‡ Rakesh I. Baman, M.D.,¶ Samer Y. Siouffi, M.D.,§ Robert M. Sangrigoli, M.D.,# and Peter R. Kowey, M.D.*

Source

Journal of Cardiovascular Electrophysiology Vol. 18, No. 3, March 2007

From the *Lankenau Hospital and Institute for Medical Research/Main Line Health Heart Center, Wynnewood, PA, †University of Medicine and Dentistry of New Jersey, New Brunswick, NJ, ‡Pottstown Memorial Medical Center, Pottstown, PA, § Mercy Hospital, Pittsburgh, PA, ¶Doylestown Memorial Hospital, Doylestown, PA, and †Applied Clinical Intelligence, Philadelphia, PA, USA

Study results

- Purpose of study was to compare the relative value of MCOT with a patient-activated loop recorder in a randomized control trial.
- 17-center, 305-subject, prospective parallel clinical trial with patients randomized to either LOOP or MCOT monitors.
- MCOT made a diagnosis in 88%, LOOP in 75%.
 - Syncope or pre-syncope subgroup: Diagnosis made in 89% of MCOT patients and 69% of LOOP patients.

University of pennsylvania study

Predictors of finding occult atrial fibrillation after cryptogenic stroke

Authors

Christopher G. Favilla, MD*; Erin Ingala, MD*; Jenny Jara, BA; Emily Fessler, BA; Brett Cucchiara, MD; Steven R. Messé, MD; Michael T. Mullen, MD; Allyson Prasad, CRNP; James Siegler, MD; Mathew D. Hutchinson, MD; Scott E. Kasner, MD. From the Department of Neurology and Division of Cardiology at University of Pennsylvania .

*Drs. Favilla and Ingala contibuted equally

Source

stroke. 2015;46:1210-1215.
DOI:10.1161/STROKEAHA.114.007763.
<https://www.ahajournals.org/doi/10.1161/STROKEAHA.114.007763>

Study results

- 28-day MCOT detected AF in a substantial proportion (14%) of cryptogenic stroke patients.
- 250 patients in a single center study - retrospective analysis of patients who underwent a 28 day MCOT.
- 84% (26 patients) were anticoagulated regardless of AF episode duration. All patients without bleeding history were offered anticoagulation regardless of duration of AF.

Case-control study

Paroxysmal atrial fibrillation in cryptogenic stroke

Authors

Alejandro A. Rabenstein, MD,*
Jennifer E. Fugate, DO,* Jay
Mandrekar, PhD,† Joseph D. Burns,
MD,** Raymond C.S. Seet, MD,*§
Stefan A. Dupont, MD,*|| Timothy
J. Kauffman, MD,¶ Samuel J.
Asirvatham, MD,** and Paul A.
Friedman, MD**

Study results

- 128 patients enrolled within 3 months of suffering first stroke.
- Paroxysmal Atrial Fibrillation (PAF) of any duration detected in 25% of total patients with MCOT monitoring.
- ALL episodes were asymptomatic.
- Nearly 20% of all patients (1 in 5) had AF detected in < 30 second episodes.

Source

Journal of Stroke and
Cerebrovascular Diseases, 2013

From the *Department of Neurology, Mayo Clinic, Rochester, MN; †Department of biomedical Statistics, Mayo Clinic, Rochester, MN; ‡Department of Neurology, Boston University, Boston, MA, §Department of Neurology, National University of Singapore, Singapore, Singapore; ||Department of Neurology, Cleveland Clinic, Cleveland, OH; ¶Department of Radiology, Mayo Clinic, Rochester, MN

MCOT

Atrial fibrillation detected by mobile cardiac outpatient telemetry (MCOT) in cryptogenic tia or stroke

Authors

A.H Tayal, MD; M. Tian, RN; K.M Kelly,
MD, PhD; S.C. Jones, PhD; D.G.Wright,
MD; D. Singh, MD; J. Jarouse, CRNP;
J. Brillman, MD; S. Murali, MD; R.
Gupta, MD

Study results

- 68 patients in a single center study —retrospective analysis of patients who underwent a 21 day MCOT.
- AF was detected in 13/56 patients = 23%.
 - 5.3% of patients had runs of AF >30 seconds in duration.
 - 85% of patients had runs of AF <30 seconds in duration.

Source

Neurology®
Volume 71, Number 21,
November 2008

Atrial fibrillation in cryptogenic stroke

Outpatient cardiac telemetry detects a high rate of atrial fibrillation in cryptogenic stroke

Authors

Daniel J. Miller^{a*}, Muhib A. Khan^a, Lonni R. Schultz^a, Jennifer R. Simpson^b, Angelos M. Katramados^a, Andrew N. Russman^a, Panayiotis D. Mitsias^a

^aHenry Ford Hospital, Detroit, MI, United States, ^bUniversity of Colorado, Denver, CO, United States

Source

Journal of the Neurological Sciences
324 (2013), p. 57-61
https://www.ahajournals.org/doi/10.1161/str.43.suppl_1.A150

Study results

- Retrospective analysis of all MCOT records for a period of 18 months (June 2009-January 2011) prescribed by Neurologists at a single Stroke Center.
- AF detected in 27 of 156 patients = 17.3%.
 - Two-thirds (n=18) developed episodes of PAF lasting less than 30 seconds.
 - 26% (n=7) lasting equal to or greater than 30 seconds.
 - 7% (n=2) had persistent AF.
- Mean time to first occurrence of AF was 8.8 days.
- Rate of PAF detection significantly increased from:
 - 3.9% in the initial 48 hours to
 - 9.2% at 7 days,
 - 15.1% at 14 days, and
 - 19.5% by 21 days
- MCOT provides a high rate of detection of AF in patients with cryptogenic stroke or TIA, and length of monitoring time is strongly associated with an increase in detection rate.

Radio-frequency catheter ablation

Symptomatic and asymptomatic atrial fibrillation in patients undergoing radiofrequency catheter ablation

Authors

Chandrasekhar R. Vasamreddy M.D., Darshan Dalal M.D., M.P.H., Jun Dong M.D., Alan Cheng M.D., David Spragg M.D., Sameh Z. Lamiy M.D., Glenn Meininger M.D., Charles A. Henrikson M.D., Joseph E. Marine M.D., Ronald Berger M.D., Ph.D., Hugh Calkins M.D.

From the Division of Cardiology, The Johns Hopkins Hospital, Baltimore Maryland and Cardiovascular Section, University of Oklahoma Health Sciences Center, OklahomaCity, Oklahoma, USA

Study results

- 390 symptomatic events were triggered by patients, 40% were confirmed as AF events and 60% were confirmed as non-AF events.
- 7 of the 10 patients were free of symptomatic AF recurrences.

Source

Journal of Cardiovascular Electrophysiology,
2006 Feb, Vol. 17, p. 134-1399
<https://pubmed.ncbi.nlm.nih.gov/16533249/#>

Suspected arrhythmia

Initial experience with novel mobile cardiac outpatient telemetry (MCOT) for children and adolescents with suspected arrhythmia

Authors

Elizabeth V. Saarel, MD,* Shirin Doratotaj, MD,[†] and Richard Sterba, MD[‡]

*Primary Children's Medical Center—Pediatric Cardiology, Salt Lake City, UT, [†]Oregon Health and Science University—Pediatrics, Portland, Ore, and [‡]The Cleveland Clinic—Pediatric Cardiology, Cleveland, Ohio, USA

Study results

- MCOT is safe and useful for evaluation of children and adolescents (who weigh \geq 22 lb.) with suspected arrhythmia, providing a diagnosis in 61% of patients.
- The diagnostic yield of MCOT was superior to that expected from traditional event and Holter monitors in this pediatric population.

Source

Congenital Heart Disease. 2008; 3:33-38

Retrospective claims analysis

Benefits of monitoring patients with mobile cardiac telemetry (MCT) compared with the event or holter monitors

Authors

Jean-Patrick Tsang, Shunmugam Mohan, Bayser Consulting, Skokie, IL, USA

Source

Published: 9 December 2013, Volume 2014:7, Pages 1—5

Study results

- Retrospective Claims Analysis comparing cardiovascular spending in the hospital setting in the 12 months following diagnosis with MCT, Event, and Holter.
- MCT demonstrated an average cost savings of \$9,352 in inpatient cardiovascular costs in comparison with Event monitoring and \$6,862 compared with Holter.
- MCOT represents a 10-15 times return on investment in the first 12 months post diagnosis in utilizing MCOT as the primary cardiac monitoring device.

Asymptomatic arrhythmias

Diagnostic yield of asymptomatic arrhythmias detected by mobile cardiac outpatient telemetry and autotrigger looping event cardiac monitors

Authors

Wayne M. Derkac MD¹, Jeffrey R. Finkelmeier BS¹, Daniel J. Horgan BBA¹, Matthew D. Hutchinson MD²

¹BioTelemetry, Malvern, PA, USA ²Division of Cardiovascular Medicine, Sarver Heart Center, University of Arizona College of Medicine Tucson, AZ, USA

Source

J Cardiovasc Electrophysiol.
2017;28:1475– 1478.
<https://doi.org/10.1111/jce.13342>

Study results

- MCOT had significantly higher diagnostic yields of all measured asymptomatic arrhythmias than the AT-LER.
- MCOT produced an earlier mean time to diagnosis for all evaluated asymptomatic arrhythmias.
- Wireless connectivity may serve to enhance asymptomatic arrhythmia detection with MCOT compared to non-wireless devices by improving patient compliance in data retrieval.
- MCOT reflected an 8:1 preference over AT-LER's by ordering providers.
- The increased cost considerations for MCOT must be weighed in the context of potential cost savings from its improved diagnostic yield and earlier arrhythmia diagnosis and treatment.

