

New early atrial fibrillation (AF) detection by an automated remote monitoring system on hyperacute stroke unit (HASU)

Pak D, Salman T, Metcalf AK, Hmu CA Norfolk and Norwich University Hospital NHS Trust, Norwich, UK

Atrial Fibrillation (AF) and Stroke

AF is a major cause of ischaemic strokes and associated with higher disability and mortality. It increases the risk of having a stroke by up to five times. It is estimated to cause around 12,500 strokes in the UK per year. (NICE 2014)

How do you monitor AF in your department?

- 12 lead ECG (Will it diagnose paroxysmal AF?)
- Visual cardiac monitor inspection (Is it reliable?)
- 24 hr OP ECG (How long does it take to get results? Is duration sufficient?)

Innovative cardiac AF monitoring system

We installed a Nihon Kohden monitoring system with remote rhythm analysis for AF detection (Apoplex).

Every night the rhythm is remotely analysed. An email report is generated. By the time of the HASU ward round the analysis is available for review.

Rhythm analysis method – Apoplex

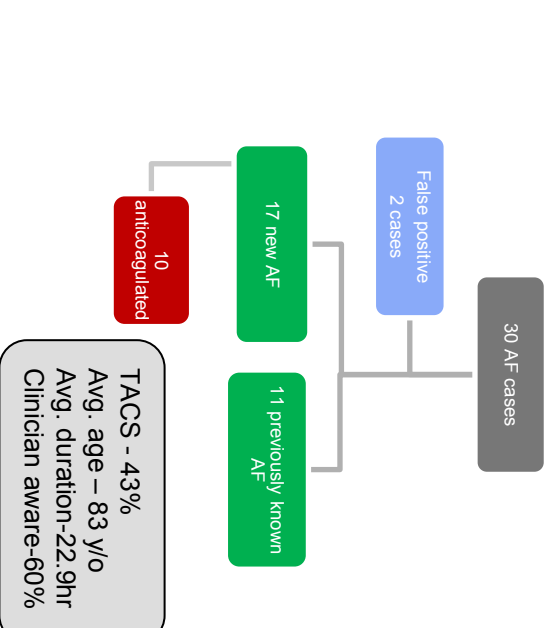
- Automated algorithm based statistical stroke risk analysis (SRA) of ECG recordings
- R-R intervals variability used to calculate the risk for paroxysmal AF (PAF)
- New PAF detection 40%-170% higher than 24hr Holter or ward based ECG monitoring on its own (Rizos et.al 2012)

Method

We retrospectively analysed Apoplex AF reports for four months in 2016. Notes were reviewed when new AF had been detected. Demographics and an anticoagulation plan were recorded.

Results

- 30 positive cases were identified via Apoplex reports
- 2 cases false positive
- Of the remaining 28 cases - 17 new AF cases, 11 previously known AF
- The average cohort age was 83 y/o
- Average duration of monitoring - 22.9 hrs
- Out of 17 new AF cases 10 were anticoagulated



Conclusion

- This is a novel system with evidence based AF detection
- Our system has proved effective in AF detection and easy to integrate into daily HASU care
- It allows early anticoagulation avoiding overuse of outpatient 24h tapes
- There may be clinical and cost benefit of this system

Discussion / future plans

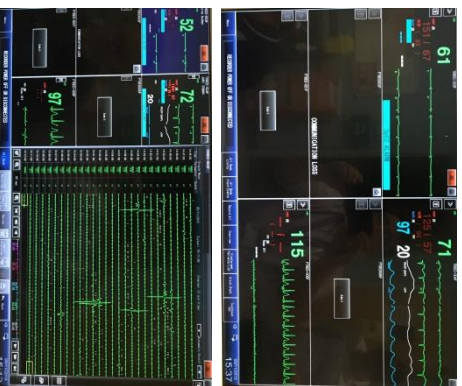
- Expansion to use Apoplex Holters for longer duration recordings
- Telemetry networking for mobile HASU patients
- Monitoring of TIA clinic patients
- Evaluation of false negative results

Declarations

- Nil

References

1. National Institute for Health and Care Excellence (2014) *Atrial fibrillation: management* (NICE, CG180)
2. Rizos T, Günther J, Jenetzky E, Marquardt L, Reichardt C, Becker R, Reinhardt R, Hepp T, Kirchhof P, Aleyritchenko A, Ringele P, Hacke W, Veitkamp R. 2012. Continuous Stroke Unit Electrocardiographic Monitoring Versus 24-Hour Holter Electrocardiography for Detection of Paroxysmal Atrial Fibrillation After Stroke. *Stroke*. *Journal of the American Heart Association*, Vol 43, No 10.



SRaclinical® Report

Monitoring and Interpretation
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Report Generated On: 04th 2016 at 15:00:00
Date of test: 04th 2016

Parameter	Value	Interpretation
AF Cases	7	7 AF cases identified
AF Episodes	11	11 AF episodes identified
AF Duration (hrs)	22.9	Average duration of monitoring
AF Type	Paroxysmal	Paroxysmal AF detected
AF Rate (b/min)	115	Average AF rate

Interpretation: The patient has been monitored for AF. The system has detected 7 AF cases, 11 AF episodes, and a total AF duration of 22.9 hours. The AF is paroxysmal. The average AF rate is 115 b/min.

