

The Audit of Monitoring of QT interval in Cancer Patients using Methadone in the Department of Clinical Oncology, Tuen Mun Hospital

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Objectives:

To review the practice of QT interval monitoring in oncology patients being prescribed methadone, including the compliance of performing baseline ECG and follow-up ECG, according to our departmental guidelines and against international standards. To review the incidence of QTc prolongation and torsades de pointes in this cohort.

Materials and Methods:

During the audit period from 1/1/2022 to 31/12/2022, 91 patients were prescribed methadone by our unit. ECG records were searched from 1/1/2022 to 30/6/2023. Baseline ECG was defined as the ECG done within 1 week before the start of methadone. Baseline and follow-up ECG records were retrieved from electronic patient records and hard copies from outpatient and in-patient care episodes. Two standards were used: primary standard was the Methadone Monitoring Program in TMH oncology, secondary standard was the Methadone safety guidelines by American Pain Society 2014.

Results:

Compliance of performing baseline ECG according to our department protocol was 87.9%. Compliance was 100% if methadone was started as in-patient, while outpatient compliance was 72.5% only. Twelve percent of patients in the audit population have baseline prolonged QTc.

Baseline ECG compliance (Department protocol)	80/91 (87.9%) In-patient: 51/51 (100%) Out-patient: 29/40 (72.5%)
Baseline QTc	Median 425ms (range 348-462ms)
Incidence of baseline QTc prolongation (>450ms)	10/91 (12.1%) Median 457.5ms (range 452-462ms)

Conclusion:

- Baseline ECG compliance was high but the follow up ECG compliance was suboptimal.
- Reason for poor compliance is most likely due to tedious and outdated monitoring schedule.
- Three percent of patients were found to have clinically significant QTc prolongation.
- Remedial actions and a new ECG monitoring protocol will be introduced.
- A reaudit is planned to be done later.

According to the secondary standard, nearly 100% of the patients with risk factors of QTc prolongation had baseline ECG done. Only 20% had follow-up ECG done within four weeks of starting methadone. For patients with risk factors of QTc prolongation, only 15% had follow-up ECG done in 2-4 weeks.

Baseline ECG compliance (Secondary standard)	34/35 (97.1%)
FU ECG compliance	
Baseline ECG with prolonged QTc > 450ms (at 2-4 weeks)	2/10 (20%)
With risk factors of QTc prolongation (at 2-4 weeks)	5/33 (15.2%)

Compliance of follow-up ECG according to our department protocol was only 15.4% to 33.3%.

	Compliance
2 days to 6 weeks after starting methadone	18/89 (20.2%)
1 month after 1st FU ECG	15/73 (20.5%)
2 months after 2nd FU ECG	11/45 (24.4%)
3 months after 3rd FU ECG	8/24 (33.3%)
3 months after 4th FU ECG	2/13 (15.4%)

Two out of sixty-four patients (3.1%) were found to have clinically significant QTc prolongation on follow-up ECG. No torsades de pointes was identified.

Incidence of QTc prolongation (>450ms) in FU ECG	21/64 (32.8%) Median 460ms (range 451-501ms)
Incidence of clinically significant QTc prolongation (>500ms)	2/64 (3.1%) Median 501ms (range 501ms)
Incidence requiring stopping or dose reduction of methadone due to prolong QTc	1/64 (1.6%)
Incidence of Torsades de pointes	0

References

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