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A self-controlled case series study to investigate the potential association between oral fluoroquinolones and neuropsychiatric disorders in Hong Kong

Background: Numerous case reports had reported potential association between the use of oral fluoroquinolones and the subsequent occurrence of neuropsychiatric disorders. However, limited observational studies were found in the current literature. This study aimed to investigate the association between the use of oral fluoroquinolones and the subsequent occurrence of neuropsychiatric disorders using the self-controlled case series design in the Hong Kong setting.

Methods: Data were collected from The Clinical data Analysis and Reporting System in Hong Kong. Patients who were aged 18 or above and had at least one prescription of oral fluoroquinolones between the years of 2001-2013 were identified. Those who also had a diagnosis of neuropsychiatric disorders (including: psychosis, cognitive impairment, bipolar and sleep disturbance) were included. Patients with neuropsychiatric disorders prior to the study period were excluded. The self-controlled case series study was performed and an incident rate ratio (IRR) was estimated by comparing the rates of events between the risk period and baseline periods. Risk windows were pre-defined as 1-14 days before fluoroquinolones treatment, current fluoroquinolones treatment, 1-7 days and 8-28 days after completion of fluoroquinolones treatment. These risk windows were then compared to the baseline periods which were defined as all other non-treatment time during the study. The Poisson regression adjusted for age was used.

Results: There were 4287 patients with 47.24% male included in the preliminary analysis who had at least one oral fluoroquinolones prescription and a diagnosis of neuropsychiatric disorders during the study period. Mean age at baseline was 61.07 years. A positive association during the current fluoroquinolones treatment and 1-7 days after completion of fluoroquinolones treatment was observed. The IRR of these periods were 2.12 (95% CI 1.58-2.83) and 1.89 (95% CI 1.30-2.75) respectively. No increased risk was observed during the 1-14 days before fluoroquinolones treatment [1.06 (95% CI 0.74-1.53)] and 8-28 days after completion of treatment [1.14 (95% CI 0.85-1.52)].

Conclusion: An acute association was observed between the use of oral fluoroquinolones and neuropsychiatric disorders. The association was observed 7 days after the completion of treatment but not during 8-28 days after completion of treatment suggesting that the association is short-term.