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SHORT COMMUNICATION:

**AUDIT OF ASSESSMENT OF RISK FACTORS AND COMPLICATIONS FROM DELIRIUM IN
GERIATRIC MEDICINE INPATIENTS**

Running title: Geriatrics audit of delirium risk factors

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ABSTRACT:

Delirium is an acute confusional state and is common in hospitalised patients. Delirium is also a risk factor for dementia and should be recognised and managed in hospital settings. The aims of this audit were to identify whether the risk factors for delirium were identified and whether investigations to evaluate for causes were performed. All patients admitted under Geriatric Medicine, RIPAS Hospital from 1st to 31st May 2021 were included. Data was obtained via the hospital electronic clinical records. This included patient demographics, documented assessment of risk factors such as cognitive impairment, falls, dehydration and pain, and whether investigations for delirium were performed. Data was entered into Excel and analysed. There were 34 patients included in the audit. There were 26 (76%) females and 8 (24%) males. Median age was 82 years (Range 70-93 years), while median length of hospitalisation was 6 days (Range 1-26 days). There were 16 (47.1%) with known dementia, 3 (8.8%) with depression, while 5 (14.7%) did not have cognitive function documented. There were 12 (35.3%) with previous falls, while history of falls was not documented in 15 (44.1%). Hydration status was documented in most, except for 2 (5.9%). In terms of investigations, serum vitamin B12 and folate were not done in 17 (50%), serum calcium not performed in 4 (12%) and thyroid function test not done in 13 (38.2%) patients. Among the 17 (50%) that complained of pain, 15 (88%) were prescribed analgesia. This audit identified a need to improve identification of risk factors for delirium.

Keywords: Delirium, Dementia, Falls, Geriatric assessment, Pain

INTRODUCTION:

Delirium is an acute confusional state associated with illness, which increases in older people. Up to 20% of older people admitted to hospital have delirium [1]. Delirium is associated with increased complications in

hospital, longer inpatient length of stay, impairment in long-term cognition and a higher risk of mortality. The risk is highest in acutely unwell patients, affecting up to 80% of those requiring the intensive care unit (ICU) [2].

A study of Geriatric medicine inpatients in a tertiary hospital in Brunei identified that two-thirds of the patients had functional impairment, with more than a third having a previous diagnosis of dementia [3]. These patients are at risk of delirium, which requires proactive assessment and management. This delirium risk was exacerbated during the COVID-19 pandemic, which was likely precipitated by increased unwellness due to delayed presentation to hospital, limited personal contact from family due to social restrictions, as well as lack of orientation and interruptions to routines in isolation wards [4].

Comprehensive geriatric assessment is the recommended approach for older people with complex medical conditions. It is a multi-dimensional approach to review the medical, psychosocial and functional aspects of a patient, and should be applied for patients at risk of or with delirium [5]. In addition to knowledge regarding baseline cognition and function, assessment and investigations to identify exacerbating factors such as infections and metabolic disturbances should be carried out, and these perturbations treated as part of delirium management. Blood tests to include for patients with cognitive issues include Vitamin B12 levels, folate, calcium and thyroid function [6]. Patients may also benefit from allied health professional input and therapy to recover from the delirium [5].

An audit of geriatric medicine inpatients was performed to evaluate the assessment of patients for delirium, in particular risk factors such as background cognitive impairment, pain, medications such as sedatives and whether relevant blood tests were obtained. In addition, assessment for complications such as falls, malnutrition, pressure injuries; as well as whether patients received corresponding allied health input was reviewed.

METHODS:

This was a retrospective review of all patients admitted under Geriatric Medicine in RIPAS Hospital from the 1st to 31st May 2021. Data was obtained via the hospital electronic medical records. The following information was obtained: patient demographics, documented history of previous cognitive impairment, pain assessment and treatment, medications and blood tests for evaluation of delirium (Vitamin B12, folate, calcium, thyroid function). Assessment for falls, pressure injuries, malnutrition, hydration status and input from allied health professionals were also reviewed.

RESULTS:

There were 34 patients, of which 26 (76.5%) were female. Median age was 82 years, with a range of 70 to 93 years. Median length of stay in hospital was 6 days (Range 1 to 26 days). Two (5.9%) patients were restrained due to delirium; one had mittens on the hands, while the other had both hands tied to the bedside

rails. Three (8.8%) patients passed away in hospital.

The most common risk factor for delirium was dementia, present in 13 (38.2%). Three patients had concurrent delirium and dementia; while one patient with delirium had suspected dementia. There were 6 (17.6%) patients who were documented as no previous cognitive impairment, while 5 (14.7%) did not have documentation regarding whether they had cognitive impairment or not prior to admission. Other risk factors for cognitive impairment were depression in 3 (8.8%), cerebral palsy in 2 (5.9%) and epilepsy in one patient.

Pain assessment was performed for all patients except for one. There were 16 (47.1%) patients identified as having pain. A wide range of analgesics were prescribed; the most common was paracetamol in 11 (32.4%), morphine in 5 (14.7%), tramadol in 3 (8.8%), gabapentin in 3 patients and diclofenac gel in 3 patients. Fentanyl was prescribed for two (5.9%) patients due to renal impairment. More than half, 18 (52.9%) did not have analgesia prescribed, 7 (20.6%) had one type of analgesic, 6 (17.6%) had two types, while three (8.8%) patients had three analgesics prescribed. Medication review for potential triggers or contributors to delirium identified six (17.6%) on sedatives, four (11.8%) on anticholinergic medications, and one patient on an antidepressant.

Blood tests performed for assessment of delirium identified that half the patients did not have their Vitamin B12 or folate levels done. For patients with these levels checked, none were found to be deficient. Calcium levels were normal for 27 (79.4%), abnormal for 3 (8.8%), and not done in 4 (11.8%). Thyroid function tests were not performed in 13 (38.2%) patients; of those checked, the results were within normal limits.

In terms of falls, 12 (35.3%) had documented previous falls, while 7 (20.6%) did not have previous falls. Fall history was not documented in 15 (44.1%) of the patients. Pressure injuries were identified in 13 (38.2%) patients, while 8 (23.5%) did not have pressure injuries. The presence or absence of pressure injuries was not documented in 13 (38.2%). A majority of patients, 32 (94.1%) were malnourished, with 25 (73.5%) seen by a dietitian. Similarly, 32 (94.1%) had hydration status documented, with intravenous fluids started for all 32 patients. Allied health professional input obtained for the patients included physiotherapy for 25 (73.5%) patients and occupational therapy for 16 (47.1%).

DISCUSSION:

This audit reviewed the assessment of patients for delirium risk factors and complications from delirium. There was a high rate of patients with known background of dementia (47.1% in this audit); this was slightly higher compared to the

previous study from the same hospital, identifying almost 40% with premorbid cognitive impairment [3].

Pain assessment was done well and performed in almost all patients. As untreated pain may contribute to delirium, a standard approach to pain assessment and management, including compliance to pain guidelines is essential for delirium management [7]. In terms of medications, some patients were on sedatives and anticholinergics, which may affect cognition and contribute to delirium. Clinicians should always reassess the appropriateness of prescribed medications during each clinical encounter. For patients with delirium, medications with anticholinergic properties should be deprescribed where possible [8]. The routine request of blood tests such as Vitamin B12, folate, calcium and thyroid function tests could be improved; with up to 50% of specific tests not requested.

Patients with delirium are at higher risk of falls. Screening for fall risk is important and should be a standard process for all older people admitted to hospital [9]. This is an area that should be improved on, with almost half the patients not having documented fall risk assessments in the clinical notes. Another standard of care for older people is screening for pressure injuries, which was not documented in up to 40% of the patients. A previous study identified up to a fifth of medical

inpatients with pressure injuries, highlighting an ongoing need to improve pressure injury assessment and prevention [10].

A large number of patients received dietitian, physiotherapy and occupational therapy input. There was a surprisingly high rate of malnutrition identified (94%); most of whom appropriately received input from a dietitian. This was higher than a previous review of malnutrition screening, identifying 50% of geriatric inpatients in the same hospital being malnourished [11]. Previous COVID-19 lockdowns and social restriction measures during the first wave may have contributed to this; further assessment of the consequences of the pandemic in older people is required to evaluate this further. The rate of referrals to physiotherapy (73.5%) and occupational therapy (47.1%) was similar to a previous study with referral rates of 71.4% and 30.2% respectively [3]. During pandemic settings, as it is necessary to limit social contact to reduce infection and transmission risk, proactive planning is required to ensure provision of rehabilitation services [12]. As allied health staff require additional time to don personal protective equipment, this may also reduce the number of patients that can be seen compared to the pre-pandemic situation.

While it is outside the scope of this audit, further consideration should be given to follow-up of patients with delirium in hospital. Patients who are acutely unwell are at risk for long-term

complications, affecting cognitive, psychiatric and physical domains [13]. As patients admitted to hospital with delirium are at risk of developing dementia, it is important to monitor their cognition after discharge.

CONCLUSION:

Areas of improvement for delirium assessment were identified in this audit. This includes documentation of pre-morbid cognition, assessment for pain and the routine blood tests that should be performed for patients with cognitive impairment (Vitamin B12, folate, calcium, and thyroid function).

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