Original article

Audit of hip fractures and standards of care in Brunei Darussalam

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Abstract

Background: Hip fractures in the elderly are associated with poor outcomes, including impaired mobility, function, quality of life, medical complications and mortality. Standards of care have been developed to improve the outcomes of hip fracture patients.

Objective: The purpose of the study was to audit the efficiency of admission to acute orthopaedic ward and time to surgery, whether hip fracture patients needed much medical input and if patients were evaluated for fall and fracture prevention.

Methods: Orthopaedic patients admitted with a hip fracture between January 2014 and December 2014 were recruited. Electronic clinical records were reviewed for data extraction and analyzed.

Results: There were 56 patients admitted with the audit done on 31 consecutive patients. Median age was 80 years (range 60 – 94 years), with two-thirds being female. Timely admissions to orthopaedic ward and time to surgery was completed in 11 (35.5%) and 4.3%, respectively. There were 8 (25.8%) of patients managed conservatively without surgery. Two-thirds of the patients required medical review. Approximately half of them did not have adequate history taken concerning their previous falls, with almost 40.0% had no documentation regarding how the patients fell. Orthostatic blood pressure was not checked for any of the patients. Half of the patients did not receive occupational therapy input, which is necessary for assessment of environmental fall risk. As for 87.0% of the patients, there were no documented plans regarding anti-resorptive therapy. The hip fracture patients had poor mobility outcomes and a prolonged length of stay. Since the audit was completed, an orthogeriatric liaison service was initiated to attempt to improve hip fracture outcomes.

Conclusion: Patients with hip fractures require timely admissions and surgery, medical review to optimize their health pre-operatively, assessment for falls and fracture risk and are at risk of poor functional outcomes.

Keywords: Elderly, hip fracture, Orthogeriatrics, osteoporosis, rehabilitation.

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Received: May 10, 2021
Revised: November 10, 2021
Accepted: December 2, 2021

Hip fractures in older people are associated with poor outcomes, including impaired mobility and function, quality of life, medical complications and increased mortality. [1] To alleviate these complications, the British Orthopaedic Association developed guidelines and recommended standards of care for patients with hip fractures. [2] The standards of care include the following: 1) admission to acute Orthopaedic ward within 4 hours of presentation; 2) if the patient is medically fit, surgery within 48 hours and during normal working hours; 3) assessment and care to minimize pressure ulcers; 4) routine access to acute ortho-geriatric medical support from time of admission; 5) assessed to determine need for anti-resorptive therapy to prevent future osteoporotic fractures; and 6) multidisciplinary assessment and intervention to prevent future falls. These standards can be audited to ensure the hip fracture patients receive quality care for their condition.

In 2015, geriatric medicine in Brunei was a new medical subspecialty. Geriatrics services are available in the main tertiary hospital, Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital, which has about 600 beds for all specialties. A study found that older patients admitted under geriatric medicine in RIPAS Hospital had a high burden of comorbidities, dementia and poor functional status; which required much medical and allied health input. [3] It was believed at the time that patients with hip fractures may be a priority group to offer geriatric medicine input (Standard 3) and assist with coordination of multidisciplinary care (Standard 6). In addition, there was already a hospital-wide initiative started to reduce risk of pressure injuries, after it was identified that there was an increase in pressure injury prevalence in the hospital. [4]

The objectives of the study were to evaluate how well standards of care were met in terms of efficiency of admission to acute orthopaedics ward (Standard 1) and time to surgery (Standard 2), whether hip fracture patients needed much medical input and if patients were evaluated for fall and fracture prevention. This paper describes the findings from a baseline audit on hip fracture patients.

Materials and methods

A registry of Orthopaedic admissions was screened for admissions with the diagnosis of hip fractures or neck of femur fractures for the period between January 1, 2014 and December 31, 2014. Patients aged 65 years and older were recruited for the analysis. The electronic clinical records were reviewed for the following details: age, gender, time to admission and time to surgery, whether medical review was required during the admission, assessment for falls and osteoporosis, as well as mobility outcomes and length of stay. The data collected was entered into an Excel spreadsheet and analyzed.

Results

The descriptive study included 56 patients admitted with hip fractures in RIPAS Hospital in 2014. After data collection for the first 31 patients, the observed trends were felt to be sufficient to indicate that some standards were not met. Thus, further data collection was stopped to allow early analysis and presentation to the Orthopaedic team.

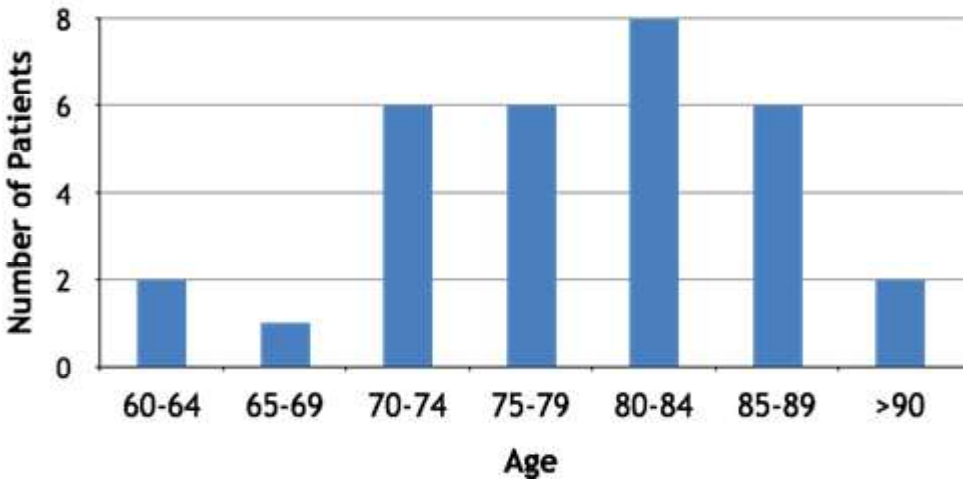
Among the 31 patients, the median age was 80 years, ranging from 60 – 94 years. Figure 1A shows the age distribution of patients. Two-thirds of the patients were female. The distribution of time to admission (hours) and time to surgery are illustrated in Figure 1B and 1C respectively. There were 11 (35.5%) patients who were admitted to the acute Orthopaedic wards within four hours of presentation. There were 23 (74.2%) patients who underwent surgery. Of these, only one (4.3%) patient had surgery within 48 hours of presentation.

Among these patients, 21 (67.7%) required medical review during the admission. The specialties that the Orthopaedic team referred to are shown in Figure 1D, with almost a third (29.0%) being referred to Endocrinology, and a quarter (25.7%) referred to Cardiology.

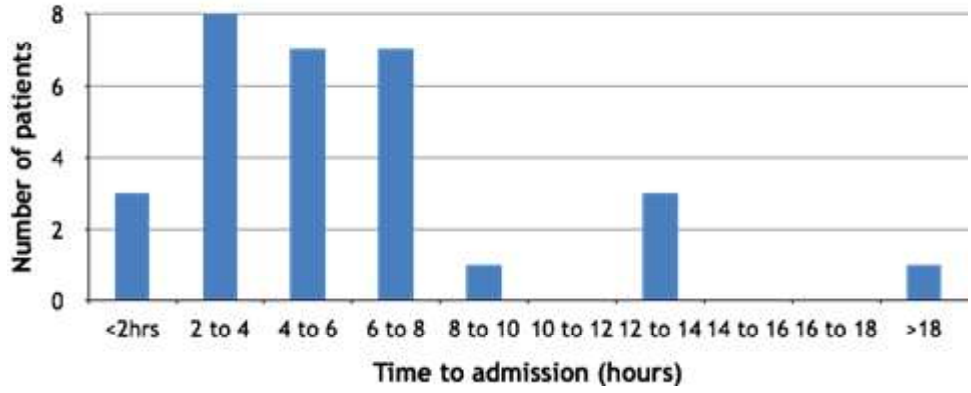
In terms of falls assessments, only 2 (6.5%) had falls within the last six months, while 14 (45.1%) did not. Almost half did not have history taken regrading whether they had previous falls. The nature of falls for all the patient's falls was documented only for one patient. As for 18 (58.1%), only the history of the admission fall was documented, with 12 (38.7%) having no documentation regarding how the patients fell. Orthostatic blood pressure was not checked in each patients. While physiotherapy input was sought for all patients, only half the patients received occupational therapy input or environmental assessment for fall hazards.

As for bone health, 25 (80.1%) had calcium and phosphate checked in blood tests. Bisphosphonates was prescribed only for 3 (9.7%), and it was documented that one patient was not appropriate for this treatment. As for the remaining 87.0% of patients, there was no consideration or documentation of plans for starting anti-resorptive therapy. None of the patients had bone mineral density assessments performed.

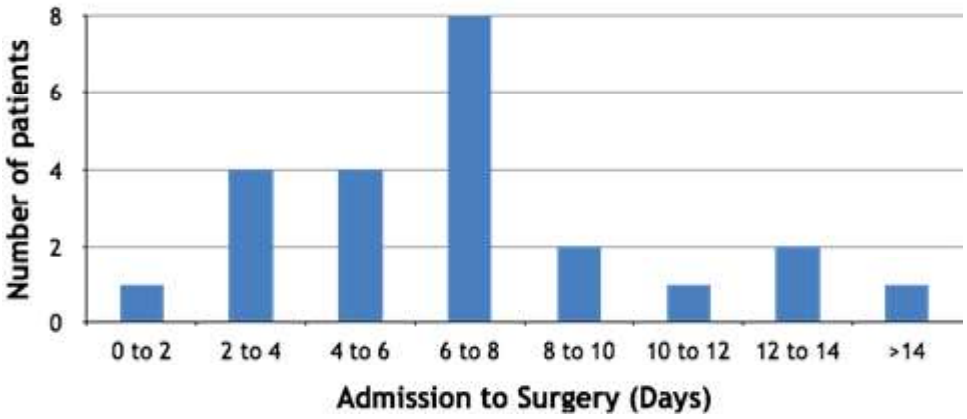
(A)


Number of Patients
8
6
4
2
0
60-64
65-69
70-74
75-79
80-84
85-89
>90
Age

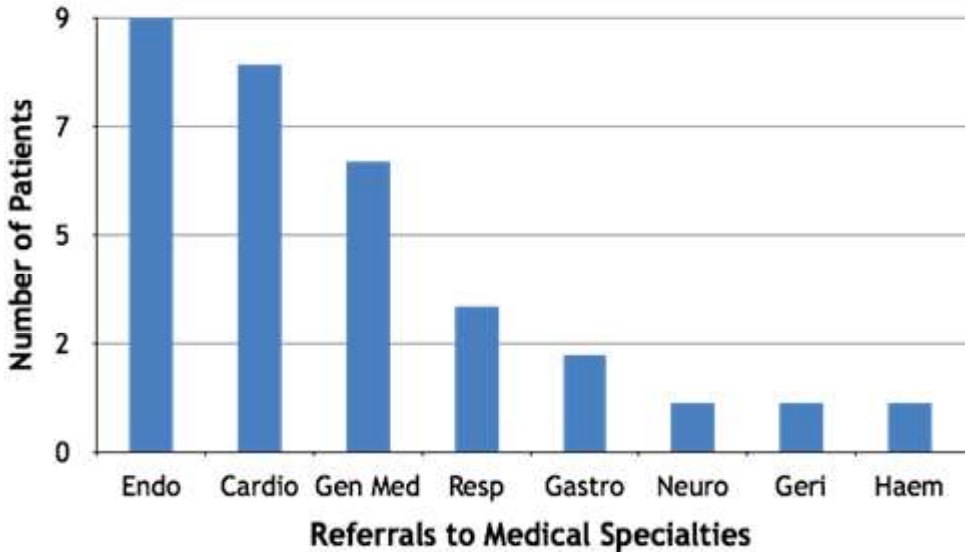
(B)


Number of patients
8
6
4
2
0
<2hrs
2 to 4
4 to 6
6 to 8
8 to 10
10 to 12
12 to 14
14 to 16
16 to 18
>18
Time to admission (hours)

(C)


Number of patients
8
6
4
2
0
0 to 2
2 to 4
4 to 6
6 to 8
8 to 10
10 to 12
12 to 14
>14
Admission to Surgery (Days)

(D)

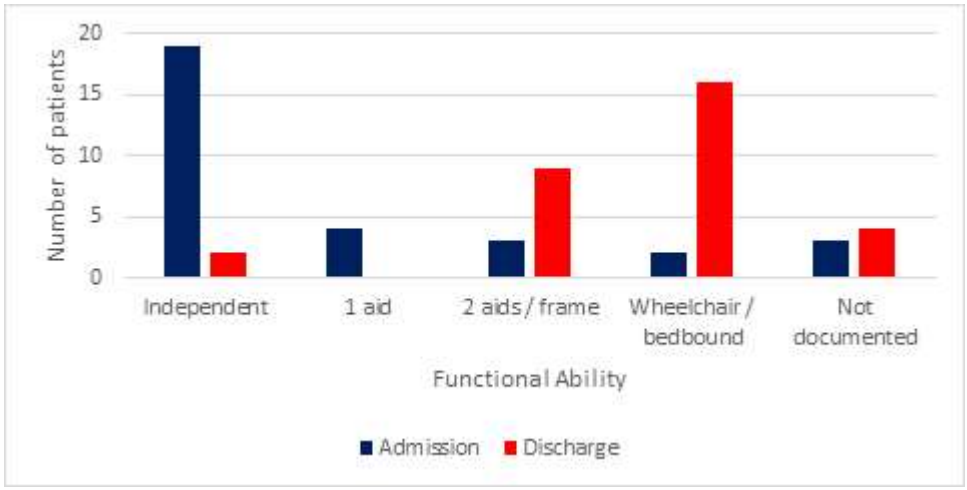


Endo – Endocrinology, Cardio – Cardiology, Gen Med – General Medicine, Resp – Respiratory Medicine, Gastro – Gastroenterology, Neuro – Neurology, Geri – Geriatric Medicine, Haem - Haematology

Figure 1. Number of hip fracture patients and their characteristics. **(A)** Age Distribution, **(B)** Time to admission, **(C)** Time to Surgery and **(D)** Referrals to medical specialties.

The outcomes of these patients are shown in Figure 2A (admission and discharge mobility) and Figure 2B (length of stay). The median length of stay for hip fracture patients was 3 weeks.

(A)



(B)

Figure 2. Patient mobility and length of stay for hip fracture patients. **(A)** Patient mobility, **(B)** duration of length of stay.

Discussion

The paper describes hip fracture patients admitted to Orthopaedics when Geriatric Medicine just started in the hospital. Several areas of improvement were identified, of which the main ones are as follows: there is a need to review why patients are not operated on and the reasons for delay in time to surgery. Patients also need a comprehensive fall assessment, and consideration of anti-resorptive therapy for osteoporosis. The patients also had poor outcomes, including a prolonged length of stay and the need for proactive discharge planning. Since the audit was performed, an orthogeriatric liaison service was proposed and initiated since May 2015. Integrated orthogeriatric care has been shown to improve hip fracture outcomes, with improved assessment and management of falls and fracture risk.[5, 6] In RIPAS Hospital, the Geriatrics team currently proactively screens all patients aged 65 years and older for their admission diagnosis. All neck of femur fracture patients are reviewed twice weekly by Geriatrics electively, as a consultative service (patients remain under Orthopaedic care). The main aims are to assess patients and optimize their medical condition for surgery, assess and manage subsequent fall and fracture risk, as well as to coordinate patient rehabilitation and discharge planning. A weekly multidisciplinary case conference is held weekly, attended by geriatrics, orthopedics, physiotherapy and occupational therapy to discuss patient goals and progress.

There was a significant delay for surgery and quarter of patients who were managed conservatively. Delays in surgery, especially over four days is associated with increased mortality.[7] It is now rarely practiced as unfixed hip fractures causes continuing pain, loss of weight bearing and high levels of dependence. The aims of surgery are to control pain and promote early mobility, with delays associated with distress to patient, higher morbidity and mortality.[2] Hip fracture patients may encounter medical complications in hospital, most frequently being cardiac and pulmonary complications.[8] Multiple medical specialties were consulted, which hopefully will be reduced with proactive geriatrics input for these patients.As falls are multifactorial, comprehensive geriatric assessment is required to formulate a holistic fall prevention strategy. This needs to be assessed post-operatively, and includes a history, examination and multidisciplinary team input. Orthostatic hypotension should be checked and is commonly caused by medication error from not stopping antihypertensives during the perioperative period, and polypharmacy. [9]

As for bone health, the patients should be evaluated for secondary causes of osteoporosis, including routine checking of calcium and phosphate. Long-term management includes prescribing calcium, Vitamin D and consideration of bisphosphonates or other anti-resorptive agents such as denosumab.[10] These patients will require follow-up to ensure tolerability and compliance, as well as considering a drug holiday after at least 5 years, as long-term bisphosphonates can be complicated by atypical femoral fractures.[11] An orthogeriatric clinic has been started for ongoing monitoring and management of falls and fracture risk after hip fracture patients are discharged from the hospital.

There are significant gaps identified in hip fracture management. This appears to be quite common in Asian countries. A study in a Beijing tertiary hospital found that only 8.0% had surgery within 48 hours, 27.0% received orthogeriatric input, 0.3% received osteoporosis treatment and 3.8% had falls assessment performed (compared to 83.0%, 70.0%, 94.0% and 92.0% respectively for the United Kingdom).[12] Another study in Singapore highlighted a need for increased awareness for osteoporosis treatment, with only 40.3% being prescribed medications within a year of a hip fracture. A fracture liaison service was recommended to improve compliance to bone health management.[13] A systematic review reiterated the need for this service, as well as funding and staffing support, and involvement of primary care in osteoporosis assessment and management.[14]

Future considerations for hip fracture patients include development of a fracture liaison service, where all fractures are assessed for osteoporosis to reduce risk of re-fractures. [15] Other services to improve care for these patients include early supported discharge and community rehabilitation to reduce length of stay. Once these services are implemented, a further audit to ensure achieving these standards of care is maintained and to evaluate clinical measures, such as length of stay and functional outcomes.

Conclusion

Patients with hip fractures require timely admissions and surgery, medical review to optimize their health pre-operatively, assessment for falls and fracture risk and are at risk of poor functional outcomes. An orthogeriatric liaison service is proposed to improve achievement of these standards of care.

Conflict of interest

The authors, hereby, declare no conflict of interest.

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