Indwelling urinary catheters at the end of life are associated with less breakthrough medication use

INTRODUCTION

At the end of life (EOL), deterioration in the ability to perform bodily functions can be a natural product of the progression of illness. The ability to empty the bladder and bowels decreases as frailty worsens, with unresponsive patients unable to control these bodily processes.

The incidence of catheterisation in palliative care often exceeds 40%[1] due to multiple factors including disease progression, frailty, incontinence and urinary retention. Insertion of an indwelling urinary catheter (IDC) is the preferred method to reduce retention, as increasing bladder volumes are uncomfortable, triggering potential pain and agitation. Retention is common in palliative care, with 63% of patients in one study presenting with retention.[1]

Regular monitoring of bladder volumes for retention should be considered part of EOL care, especially in patients who become agitated and unable to communicate due to physical deterioration,[2] as alleviation of retention with an IDC can provide symptomatic relief. It is unclear what the incidence of urinary retention at EOL is, and whether patients with retention are not being identified and are being treated with medications instead of an IDC.

This project aimed to determine the incidence of patients referred to a tertiary hospital palliative care service at EOL who required an IDC and to analyse the pattern of medications given for pain and distress preinsertion and postinsertion, to determine if IDC insertion could limit exposure and potential medication-related harms.

METHODS

Patients referred to a tertiary palliative care consult service for EOL care were enrolled as part of an internal quality improvement process. Daily bladder scans were performed by ward-based nurses to assess for retention. If volume exceeded 400 mL or the patient became uncomfortable with abdominal tenderness, an IDC was inserted. Medication requirements for pain and agitation were recorded both preinsertion and postinsertion. Patients referred with an IDC already in situ were excluded from daily bladder scans, but were included in the referral count. Data was compared using unpaired t-tests.

The project ran from the start of November to the end of December 2021.

RESULTS

Thirty-five patients were included, of whom 20 had an IDC on initial assessment. The remaining 15 patients were monitored with daily bladder scans and the majority (60%, 9 of 15) required an IDC. All 15 monitored patients were treated with a syringe driver at EOL. Primary diagnoses varied, including pneumonia (53%), stroke (20%) and malignancy (13%). No patients with malignancy were present in the IDC group. The demographic details are shown in table 1.

The majority of patients required breakthrough opioid or benzodiazepine at EOL. In the IDC group, there was a statistically significant decrease in breakthrough opioid doses postinsertion, with a mean of 2 opioid doses given in the 24 hours preinsertion and 0.33 doses postinsertion (p=0.011). There was a similar decrease in benzodiazepine use in the IDC group, with a mean of 1.56 breakthrough doses in the 24 hours preinsertion and 0.22 doses in the 24 hours postinsertion (p=0.028). In the IDC group, opioid infusions did not increase significantly, with a mean change of +19% (p=0.095); benzodiazepine infusions also did not significantly increase, with a mean change of +15% (p=0.33). Similar results were seen in the non-IDC group, with a mean change in opioid infusions of +17% (p=0.15) and a mean change in benzodiazepine infusions of +28% (p=0.11) during monitoring.

Comparing the groups showed no significant difference in breakthrough opioid doses required in the last 24 hours of life, with the IDC group using on average 1.22 doses and the non-IDC group 1.83 (p=0.29). There was a significantly less benzodiazepine requirement in the IDC group in the last 24 hours of life, with IDC patients requiring 0.89 breakthrough benzodiazepine doses on average, compared with 2.17 for non-IDC patients (p=0.024).

Of a total of 45 (87%) patients, 39 required an IDC at EOL, including the initially catheterised patients.

DISCUSSION

Urinary retention at EOL is common, with 60% of monitored patients in this study requiring insertion of a catheter to manage symptoms. This is in keeping with the literature, with rates of 53%–63% quoted[1 3]; however, the total number of patients did reach 87%, counting patients already catheterised.

Table 1 Demographics and bladder monitoring

	IDC patients	Non-IDC patients
Male	5	4
Female	4	2
Age, median (range)	86 (66–94)	92 (63–93)
Maximum bladder volume, average (range) (mL)	698 (492–900)	121 (20–280)
Days screened, median (range)	1 (1–3)	1 (1–3)

IDC, indwelling urinary catheter.

Retention should be treated with catheterisation as per the recommendation of specialist guidelines[2]; however, utilisation in practice varies. A recent Japanese study measuring the use of an IDC at EOL found catheterisation rates as low as 0% and as high as 55.4%, institution-dependent.[4]

Symptoms at the EOL that may be attributed to bladder irritation or urinary retention include pain and agitation, which may be multifactorial in nature.[1] Notably, in this study, there was a low prevalence of malignant diagnosis (13%) and there were no malignancies in the IDC group, which are unusual for a palliative care cohort. These patients may have alternative requirements for opioids and benzodiazepines; however, these are potentially less visible in a group with a low prevalence of malignancy, such as the one seen here. A reduction in use of breakthrough medications is favourable as the side effect profiles of opioids and benzodiazepines could result in worsening symptoms, such as delirium, despite the intention of managing symptoms. Controlling agitation non-pharmacologically, such as with an IDC, could result in less potential harms, as well as decrease the time required for nursing staff to focus on medication management, allowing for other vital tasks, including personal care and family support. It has been suggested that an IDC in the terminal phase may improve the quality of death.[5]

There are significant limitations to this study, notably the sample size and the potential for confounding. Significant numbers of patients were referred with an IDC in situ; inclusive of this group, the total percentage of patients catheterised in this study at the EOL was 87%. There were patients in whom IDC had been potentially inserted for acute issues, resulting in a lack of clarity around the absolute requirement at EOL.

CONCLUSION

Monitoring of urinary volume should be considered as routine part of EOL care, with consideration of IDC to alleviate symptoms. Although a statistically significant reduction in breakthrough doses of benzodiazepines was seen in catheterised patients, this cannot be causally linked to IDC insertion from this study and future work in this space is needed.

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