Risk Factors and Outcomes Associated with Initial Use of Inappropriate Indwelling Urinary Catheters among Hospitalized Elderly

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Background

There is approximately 73% of catheterized inpatients are elderly, of which up to 33%–49% are improperly used. Indwelling of urinary catheters is not only associated with prolonged length of hospital stay, increased cost of treatment, but also associates with increased mortality rate, and causes of other complications.

Purpose

It is to explore the risk factors for inappropriate use of indwelling urinary catheters (IUCs) and determine the association between inappropriate catheters use and outcomes. Furthermore, the incidence rate of inappropriate use of IUCs and the reasons for indwelling urinary catheters use were also explored.

Methods

The subjects were selected with a purposive sampling method at a medical center in Southern Taiwan. A prospective study was conducted to collect data from hospitalized elders who used IUCs within 48 hours after admission. Data including: demographic variables, Charlson Comorbidity Index (CCI), Katz Index of Independence in Activities of Daily Living (Katz ADL), Geriatric Depression Scale Short–Form (GDS), Short Portable Mental Status Questionnaire (SPMSQ), and information of IUCs placement. The outcomes associated medical care was collected at discharge.

Results

The incidence rate of inappropriate use of IUCs was 37.4%. The most frequent indication for catheterization was surgical intervention (43.1%), the second most frequent indication was accurate assessment of urinary output (37.5%). The most common reasons that inappropriate IUCs use was for convenience (62.8%), and used for manage acute urinary retention without assessment (18.6%).

The findings of logistic regression analysis suggested that the diagnosis of urinary tract infection (OR=7.75, 95%CI=1.84-32.73, p=.005), lower scores of SPMSQ (cognitive function) (OR=0.77, 95%CI=0.62-0.96, p=.02), and higher Katz scores (activities of daily living) (OR=1.17, 95%CI=1.04-1.33, p=.012) were risk factors associated with inappropriate IUCs use among hospitalized elderly. Inappropriate catheterized patients also had a poor recovery in activities of daily living at discharge (Figure 1), but were not associated with such outcomes as catheter- associated urinary tract infection, length of hospital stay, nursing home admission, mortality, and catheters reinsertion.

TABLE 1.
Patient characteristics with appropriate and inappropriate urinary catheterization (n=115)

Characteristics	Total（n=115） n(%)/MSD	Appropriate IUCs（n=72） n(%)/MSD	Inappropriate IUCs（n=43） n(%)/MSD	p
Age(years)	77.806.64	77.286.45	78.676.94	.277
Gender				.606
Male	49(42.6)	32(44.4)	17(39.5)	
Female	66(57.4)	40(55.6)	26(60.5)	
Marital status				.120
Single	57(49.6)	34(47.2)	23(53.5)	
Other	58(50.4)	38(52.8)	20(46.5)	
Education				.883
Uneducated	34(29.6)	23(31.9)	11(25.6)	
Educated	81(70.4)	49(68.1)	32(74.4)	
Living arrangement				.445
Own home	8(7.0)	4(5.6)	4(9.3)	
Other	107(93.0)	68(94.4)	39(90.7)	

Conclusion

Urinary catheters were inappropriately used more commonly among the diagnosis of urinary tract infection, poor cognitive function, and better activities of daily living status in older patients. Careful attention to this aspect of medical care may increase the degree of recovery in activities of daily living at discharge.

TABLE 2. Logistic Regression Analyses of the Relation Between Patient Characteristics and IUCs, Among Hospitalized Elderly Patients with Initial Use of Inappropriate IUCs

Risk Factor	Mode 1 OR (95%CI)	p-value	Mode 2 OR (95%CI)	p-value	Mode 3 OR (95%CI)	p-value
Age	1.04(0.98-1.10)	.225	1.03(0.95-1.11)	.510	1.01(0.93-1.10)	.748
Gender	0.88(0.39-2.01)	.769	0.81(0.27-2.43)	.704	0.83(0.27-2.59)	.800
Higer CCI score			1.08(0.92-1.27)	.356	1.07(0.90-1.28)	.473
Urinary tract infection			7.75(1.84-32.73)	.005	7.84(1.67-36.79)	.009
Urinary incontinence			0.25(0.06-1.16)	.053	0.25(0.06-1.01)	.051
Lower SPMSQ score			0.77(0.62-0.96)	.020	0.78(0.62-0.99)	.045
Higer GDS score			1.83(0.54-6.18)	.331	1.67(0.45-6.25)	.448
Higer Katz ADL score			1.17(1.04-1.33)	.012	1.18(1.02-1.36)	.025
Bedrest ordered					0.61(0.13-2.94)	.537
Location of IUC placement (Emergency department vs. Surgical department)					0.87(0.24-5.27)	.874
Location of IUC placement (Medical department vs. Surgical department)					0.89(0.11-6.66)	.889
Age of major caregiver					0.98(0.94-1.03)	.415

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