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關鍵字 (英)	urinary catheter, uropathogen, antimicrobial, resistance
摘要 (中)	<p>住院病人留置尿管盛行率及導尿管相關尿路感染之菌種與抗藥性分析 背景與目的：留置尿管常用來處理尿貯留與尿失禁，然而有其相關風險與併發症；本研究將探討留置尿管在台灣住院病人間使用的盛行率，及導尿管相關尿路感染的細菌菌種與抗藥性情況，藉此提供病人照顧與治療的參考。</p> <p>材料與方法：利用 2003 年「全民健康保險學術研究資料庫」之「住院醫療費用清單明細系統抽樣檔」及其相對應之住院醫令資料，以及「醫事機構基本資料檔」的資料，本研究估計留置尿管在全體住院病人、不同醫療科別、不同地區、不同醫院層級、年齡層與性別間的盛行率。至於導尿管相關尿路感染的菌種與抗藥性分析，則是擷取某區域醫院 2004 年所有的尿液培養結果，以比較留置尿管是否會在細菌菌種分佈與抗藥性程度上造成明顯差異。</p> <p>結果：2003 年住院病人執行留置尿管之總體盛行率為 14.1%，在不同醫療科別：內科、外科、骨科及婦產科的盛行率分別是 11.1%、13.4%、18.2%及 35.5%。內科病人留置尿管的盛行率在醫學中心、區域醫院與地區醫院分別是 11.2%、10.4%和 11.9%；依地域來看，台灣北區、中區、南區及東區分別是 10.3%、11.2%、12.2%及 8.5%；從性別及年齡的分層來看，50-59、60-69、70-79 及 80-89 歲男性，盛行率分別是 7.5%、11.6%、15.8%及 21.1%，而女性在相對年齡層則分別為 7.0%、10.4%、18.2%及 24.0%。在菌種分析部分，無留置尿管者以大腸桿菌（<i>Escherichia coli</i>）最常見，其次為非大腸桿菌的腸內桿菌屬（non-<i>E. coli</i> Enterobacteriaceae）、綠膿桿菌（<i>Pseudomonas</i> spp.）和腸球菌（<i>Enterococci</i> spp.），各佔 36.8%、19.2%、8.6%和 7.3%；有留置尿管者也是大腸桿菌最常見，但比例較低為 23.4%，其次為非大腸桿菌的腸內桿菌屬佔 20.5%，綠膿桿菌雖也是第三位，但比例較高為 16.4%，而一些抗藥性強的罕見革蘭氏陰性桿菌（Rare Gram negative bacilli）比例上升排第四位，佔 5.8%。在細菌抗藥性分析部分，大腸桿菌對於常用的磺胺類藥物（sulfamethoxazole + trimethoprim, SXT）有很高的抗藥性（32.3%-73.5%），相對於無留置尿管，有留置尿管者更具抗藥風險。大腸桿菌對於其他常用抗生素，以 cefazoline（CZ）、amoxicillin+clavulanic acid（AMC）、ciprofloxacin（CIP）及 gentamicin（GM）的抗藥比例較高，而 amikacin（AN）、ceftazidime（CAZ）及 imipenem（IPM）的抗藥比例較低；除了 IPM 外，幾乎都可發現留置尿管顯著增加抗藥性。非大腸桿菌的腸內桿菌屬對於 SXT 也有很高的抗藥性，相對於無留置尿管者，有留置尿管者也有較高的抗藥性，此外，非大腸桿菌的腸內桿菌屬對於 CZ 與 AMC 的抗藥比例也很高，對 IMP 的抗藥性最低，留置尿管也會增加抗藥風險。綠膿桿菌對 AMC 抗藥比例很高，AN、CAZ 及 IPM 則有較低的抗藥性；至於留置尿管對於抗藥性的影響並不明顯。其他罕見革蘭氏陰性桿菌對抗生素的抗藥比例都很高，只有對 IPM 有較低的抗藥性；留置尿管對於抗藥性的影響並不明顯。在共同抗藥性的探討部分，包括大腸桿菌在內的腸內桿菌屬若對 SXT 抗藥時，也</p>

	<p>容易對 CZ、AMC、CIP 及 GM 產生共同抗藥性，這種情形在有留置尿管者更為明顯。結論 2003 年台灣住院病人留置尿管之盛行率為 14.1%，其中內科系執行盛行率為 11.1%。留置尿管增加綠膿桿菌與其他罕見革蘭氏陰性桿菌等抗藥性強的菌種引起尿路感染的比例，也會增加一般細菌與腸內桿菌屬之抗藥性，造成治療上的困難；使用留置尿管前應審慎考量其必要性。關鍵詞：留置尿管、尿路感染、菌種、抗藥性</p>
<p>摘要 (英)</p>	<p>Prevalence of indwelling urinary catheter among hospitalized patients and analysis of uropathogens and pattern of antimicrobial resistance associated with the use of urinary catheter Purpose: Indwelling urinary catheter has been frequently used to manage urinary retention or incontinence despite it might cause certain complications. In this study, we evaluated the prevalence of indwelling urine catheter among hospitalized patients in Taiwan. We also analyzed uropathogens and pattern of antimicrobial resistance associated with urinary catheter utilization. Information from this analysis can be used as reference in future care and treatment of patients. Materials and Methods: Using the files of inpatient expenditures by admissions, details of inpatient orders and registry for contracted medical facilities from the National Health Insurance Research Database, we estimated the overall and stratum specific prevalence of indwelling urinary catheter among hospitalized patients according to admitted department, geographic area and accreditation level of hospitals, age and gender of patients in 2003. The distribution of uropathogens and pattern of antimicrobial resistance were analyzed with the reports of all urine cultures from the laboratory of a regional hospital in 2004. Comparison was made to examine whether the use of urinary catheter may be associated with different uropathogens and pattern of antimicrobial resistance. Results: The overall prevalence of indwelling urinary catheter among all hospitalized patients was 14.1% in 2003. The prevalence among patients admitted to the department of internal medicine, surgery, orthopedic and gynecology and obstetric was estimated at 11.1%, 13.4%, 18.2% and 35.5% respectively. The prevalence among patients admitted to the department of internal medicine was 11.2% in medical centers, 10.4% in regional hospitals, and 11.9% in local hospitals. Geographic variation showed that the prevalence in northern, middle, southern and eastern part of Taiwan was 10.3%, 11.2%, 12.2% and 8.5% respectively. According to age and gender, the prevalence for male patients aged 50-59, 60-69, 70-79 and 80-89 years was estimated at 7.5%、11.6%、15.8% and 21.1%, respectively. The corresponding figures for female were 7.0%, 10.4%, 18.2% and 24.0%. Analysis of uropathogens showed that <i>Escherichia coli</i> (36.8%) was the most common pathogen causing urinary tract infections of patients without indwelling urinary catheter, followed by non-<i>E. coli</i> Enterobacteriaceae (19.2%), <i>Pseudomonas</i> spp. (8.6%), and <i>Enterococcus</i> spp. (7.3%). Of the patients with indwelling urinary catheter, <i>Escherichia coli</i> (23.4%) was still the most common uropathogen, followed by non-<i>E. coli</i> Enterobacteriaceae (20.5%), <i>Pseudomonas</i> spp. (16.4%), and rare Gram negative bacilli (5.8%). The resistance rates of <i>Escherichia coli</i> against sulfamethoxazole + trimethoprim (SXT) were high, ranging from 32.3% to 73.5%. Indwelling urinary catheter further increased the risk of resistance. With regarding to the resistance of <i>Escherichia coli</i> to other commonly prescribed</p>

	<p>antimicrobials, the resistance rates were higher against cefazoline(CZ), amoxicillin+clavulanic acid (AMC), ciprofloxacin (CIP) and gentamicin (GM); but relatively low against amikacin (AN), ceftazidime (CAZ) and imipenem (IPM). Indwelling urinary catheter may also increase the risk of resistance against nearly all antibiotics except IPM. The resistance rate for non-E.coli Enterobacteriaceae against SXT was also high, especially among the patients with indwelling urinary catheter. Additionally, the resistance rates were also high against CZ and AMC, but low against IMP. Again, indwelling urinary catheter was also observed to increase risk of resistance. Pseudomonas spp. was observed to be highly resistant against AMC and was less likely to be resistant against AN, CAZ and IPM. However, indwelling urinary catheter did not seem to be able to increase the risk of resistance of Pseudomonas spp. The resistance rates were generally high for rare Gram negative bacilli against all tested antimicrobials except IPM. Moreover, indwelling urinary catheter did not increase much of the risk of resistance of Pseudomonas spp. and rare Gram negative bacilli. With regard to concurrent resistance, it showed that concurrent resistance of SXT with CZ, AMC, CIP and GM, respectively was all significant for the Enterobacteriaceae including Escherichia coli. Concurrent resistance was particularly evident among patients with indwelling urinary catheter. Conclusions: In 2003, the prevalence of indwelling urinary catheter among all hospitalized patients and patients admitted to the department of internal medicine in Taiwan was 14.1% and 11.1% respectively. Indwelling urinary catheter not only increased the urinary tract infections caused by intrinsically more resistant pathogens such as Pseudomonas spp. and rare Gram negative bacilli, but also increased the risk of antimicrobial resistance of Enterobacteriaceae. This may lead to difficulty in treating patients. We recommended caution be exercised before using indwelling urinary catheter. Keywords: urinary catheter, uropathogen, antimicrobial, resistance</p>
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