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**Corynebacterium associated with prolonged antibiotic treatment and recurrence in complicated mastitis**

Sung-Ching Pan\*<sup>1</sup>, Wei-Chia Huang<sup>1</sup>, Guan-Jhou Chen<sup>1</sup>, Shwen-Chwen Chang<sup>2</sup>

<sup>1</sup>*National Taiwan University Hospital*

<sup>2</sup>*National Taiwan University Hospital; Internal Medicine*

**Background:** Mastitis occurs in approximately 20 percent of breastfeeding women, and Staphylococcus had been implicated as the most prominent pathogen responsible for this condition. However, new evidence has suggested that an increasing number of women suffer from non-gestational mastitis. Although it has a low mortality rate, mastitis may lead to prolonged antibiotic treatment, and further debridement may be needed to eradicate the infection. Thus, we aim to identify the epidemiology and risk factors for morbidity among cases of complicated mastitis.

**Material/methods:** This was a retrospective cohort study conducted in one tertiary teaching medical centre in Taiwan. From Jan 1, 2012, to Dec 31, 2015, patients who had been diagnosed with mastitis (ICD-9 code as 611.0) and required hospitalization were identified. Epidemiological characters of the patients and pathogens were collected via medical chart review.

**Results:** 189 patients who had complicated mastitis were enrolled. All patients were female, and the mean age was 41.2±13.6 years old (range 20-94). Of these patients, 20.6% had breast cancer (39/189), 11.7% (22/189) were lactating, 5.3% (10/189) had breast implantation, and 4.8% (9/189) were pregnant; 65.6% (124/189) patients had received debridement.

Microbiological culture had been performed for all patients, and 62.2% (115/189) had positive cultures. Of these patients, 46.1% (53/115) had multiple pathogens. The most common pathogen was coagulase-negative Staphylococcus (45/146, 31.0%), followed by Corynebacterium spp. (40/146, 27.4%).

The mean hospitalization duration was 12.0±18.8 days (range 1-146), and the mean total antibiotic treatment duration (including parental and oral route) was 101.3±105.3 days (range 3-693). Only one patient died during antibiotic treatment, and the death was attributed to the patient's underlying breast

cancer (0.5%, 1/189). The other patients all completed treatment, but 17.5% (33/189) of them had mastitis recurrence during the study period.

By multivariate linear regression analysis, the statistically significant risk factors for prolonged antibiotic treatment included infection by *Corynebacterium*, gestational mastitis and young age ( $P < 0.001$ ,  $< 0.001$ , and  $0.02$ , respectively). By multivariate logistic regression, *Corynebacterium* carried 2.96-folds higher risk for recurrent infection (95% CI: 1.25-6.99) after adjusting for age (Table 1).

**Conclusions:** Although *Corynebacterium* is often considered a skin colonizer, this study revealed that *Corynebacterium* is associated with prolonged antibiotic treatment and increased risk of recurrent mastitis. The role of *Corynebacterium* in mastitis needs further study. If *Corynebacterium* has a pathological effect in breast infections, then proper antibiotics that are effective against the pathogen and carry adequate breast penetration warrant further exploration.

Table 1

Risk factor for prolonged antibiotic treatment: Multivariate linear regression			
	Coefficients	95% CI	P value
Gestational mastitis	124.4	60.6~188.3	<0.001
<i>Corynebacterium</i>	86.0	52.6~119.4	<0.001
Age	-1.3	-2.4~-0.26	0.02

  

Risk factor for recurrent mastitis: multivariate logistic regression			
	Odds ratio	95% CI	P value
<i>Corynebacterium</i>	2.96	1.25-6.99	0.01
Age	0.93	0.89-0.98	0.005

CI: confidence interval