

## RESEARCH ARTICLE

# Prevalence of Abnormal Cervical Cytology in HIV-Negative Women Participating in a Cervical Cancer Screening Program in Calmette Hospital, Cambodia

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### Abstract

**Background:** According to the most recent estimation of GLOBOCAN, Cambodia has the highest incidence and mortality rate of cervical cancer in Southeast Asia. A screen-and-treat strategy using visual inspection with acetic acid (VIA test) and cryotherapy has been implemented in Cambodia's national cervical cancer screening program since 2013. However, where resources are available, cervical cytology with or without high-risk HPV DNA testing is the preferred screening method used in this country. **Aim:** This study aims to calculate the prevalence of abnormal cervical cytology and explain the possible factors contributing to a reduced quality of cervical cytology among women participating in a hospital-based cervical cancer screening program in Cambodia. **Materials and Methods:** A descriptive study was conducted using information from the cytology and pathology database in the Department of Pathology of Calmette Hospital between January 2012 and December 2015. Prevalence of abnormal cervical cytology, based on the Bethesda 2001 classification, was calculated. Data on the adequacy of cytological specimens were analyzed in order to explain the factors contributing to a reduced quality of cervical cytology interpretation. **Results:** Among 6,207 women who participated in the cervical cancer screening program at Calmette Hospital during 2012 and 2015, 388 (6.25%) had abnormal cytology, which could be classified into Atypical Squamous Cells of Undetermined Significance (92 cases; 1.48%), Atypical Squamous Cells – Cannot Exclude High-Grade Intraepithelial Lesion (13 cases; 0.21%), Atypical Glandular Cells (11 cases; 0.18%), Low-Grade Squamous Intraepithelial Lesion (221 cases; 3.56%), High-Grade Squamous Intraepithelial Lesion (26 cases; 0.42%), and Squamous Cell Carcinoma (25 cases; 0.40%). Unsatisfactory smears made up 12.2% of the total cases. The most frequently identified factor leading to unsatisfactory smears was the absence of cells from the transformation zone. **Conclusions:** The present study showed an overall prevalence of abnormal cervical cytology of 6.25%, which is comparable to that in many large population-based studies in the Asia Pacific region. Nevertheless, the remarkably high rate of unsatisfactory smears in this study justifies further improvement in specimen sampling among Cambodian gynecologists.

**Keywords:** Cambodia - cervical cancer screening - prevalence of abnormal cervical cytology

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### Introduction

Cancer of the uterine cervix is the second most common cancer among women worldwide. It has a major impact on developing countries where almost 80% of the cases occur. It is the second most common cancer among women in Southeast Asia and the most frequent cancer in Cambodia (Ferlay et al., 2015). As in many other developing nations, screen-and-treat strategy using visual inspection with acetic acid (VIA test) and cryotherapy has been implemented in Cambodia's national cervical

cancer screening program since 2013. Where resources are available, cervical cytology with or without HPV DNA testing is the preferred screening method in this country. To date, there have been no published data on the result of the national screening program. The aim of this study is to present the prevalence of abnormal cervical cytology among HIV-negative women participating in an active cervical cancer screening program at Calmette Hospital, a tertiary national referral and teaching hospital which will become Cambodia's National Cancer Center in 2017. Calmette Hospital has been running cervical cancer

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prevention program since 2012 by organizing a number of yearly cervical cancer awareness campaigns as well as providing free cervical cancer screening services to poor women.

### Materials and Methods

This was a retrospective study conducted by retrieving all conventional cervical cytology reports of HIV-negative women participating in the hospital’s cervical cancer screening program between January 2012 and December 2015. HIV status was self-reported by the women during pre-screening interrogation. All cytological smears had

**Table 1. Prevalence and distribution of abnormal cervical cytology in Calmette Hospital**

Bethesda 2001 classification	Number (%)
Negative for intraepithelial lesion or malignancy	5,819 (93.75%)
Epithelial abnormalities	388 (6.25%)
ASCU-US	92 (1.48%)
ASC-H	13 (0.21%)
AGC	11 (0.18%)
LSIL	221 (3.56%)
HSIL	26 (0.42%)
SCC	25 (0.40%)
Adenocarcinoma	-
Total	6,207 (100%)

**Table 2. Specimen adequacy evaluation of cervical cytology at Calmette Hospital**

Specimen adequacy	Number (%)	% Unsatisfactory
Satisfactory for evaluation	5,453 (87.85%)	
Unsatisfactory for evaluation	754 (12.15%)	
Absence of cells from the transformation zone	680 (10.95%)	90.18%
Obscuring/excessive blood	24 (0.38%)	3.18%
Obscuring white blood cells	33 (0.53%)	4.37%
Poor/scant cellularity	17 (0.27%)	2.25%
Total	6,207 (100%)	

**Table 3. Prevalence of Abnormal Cervical Cytology in Asia Pacific Countries**

Author	Country	Study size	Prevalence of abnormal cytology
Tabrizi SN et al. (2014)	Australia	2,557	9.34%
Nessa A et al. (2013)	Bangladesh	650	1.20%
Hav M et al. (this study)	Cambodia	6,207	6.25%
Hou R et al. (2012)	China	6,339	8.40%
Deodhar K et al. (2012)	India	5,519	6.10%
Kobayashi D et al. (2013)	Japan	3,804	6.20%
Nabandith V et al. (2012)	Lao PDR	196	3.00%
Elit L et al. (2006)	Mongolia	2,009	3.00%
Mu-Mu-Shwe et al. (2014)	Myanmar	1,771	8.00%
Marahatta Khanal R et al. (2014)	Nepal	1,751	1.14%
Yeong ML et al. (2013)	New Zealand	9,232	7.83%
Tayyeb R et al. (2003)	Pakistan	501	14.40%
Thamboo T. P et al. (2003)	Singapore	10,207	2.52%
Han MA et al. (2012)	South Korea	4,072,997	6.60%
Chou P et al. (1990)	Taiwan	175,823	1.13%
Tidaporn Y et al. (2002))	Thailand	61,701	0.85%

been collected with Ayre spatula, and slides were screened by two Pathologists (MH and MP) and interpreted based on the second edition of the Bethesda system for reporting cervical cytology. A cervical cytology was considered abnormal when atypical squamous cells of unknown significance (ASC-US), low-grade squamous intraepithelial lesion (LSIL), atypical squamous cells – cannot exclude high-grade intraepithelial lesions (ASC-H), high-grade squamous intraepithelial lesion (HSIL), atypical glandular cells, adenocarcinoma in situ, squamous cell carcinoma (SCC) or adenocarcinoma was detected. The prevalence of abnormal cervical cytology was calculated, and data on their specimen adequacy were analyzed in order to explain the factors contributing to a reduced quality of cervical cytology interpretation. Statistical analyses were performed with StatView 5.0.1 statistical software system (SAS Institute, Inc., Cary, NC) using descriptive statistical methods.

### Results

Among 6,207 HIV-negative women who participated in the cervical cancer screening program at Calmette Hospital during 2012 and 2015, 388 women (6.25%) had abnormal cytology. LSIL was the most common cytological abnormality, accounting for 3.56% of the cases (Table 1). The mean age of women screened was 40 years. Unsatisfactory smears made up 12.15% of the total cases. The most frequently identified factor leading to unsatisfactory smears was the absence of cells from the transformation zone (Table 2).

### Discussion

The greatest incidence and mortality rates of cervical cancer in Southeast Asia are found in Cambodia, where the incidence is 23.8 and the mortality is 13.9 per 100,000 inhabitants (Ferlay et al., 2015). Early detection of precursor lesions by cervical cytology is known to decrease the incidence of cervical cancer (Gustafsson et al., 1997a; Gustafsson et al., 1997b; Quinn et al., 1999; Minelli et al., 2004). The prevalence of cervical cytological abnormalities in Asia Pacific region ranges from 0.85% to

14.40% (Chou et al., 1990; Tidaporn et al., 2002; Tayyeb et al., 2003; Thamboo et al., 2003; Elit et al., 2006; Deodhar et al., 2012; Han et al., 2012; Hou et al., 2012; Nabandith et al., 2012; Kobayashi et al., 2013; Nessa et al., 2013; Yeong et al., 2013; Marahatta Khanal, 2014; Mu-Mu-Shwe et al., 2014; Tabrizi et al., 2014). The present study showed an overall prevalence rate of abnormal cervical cytology of 6.25%, which is comparable to that in many large population-based studies in the region (Table 3). If compared to the benchmark data collected by the College of American Pathologists (CAP) Cytopathology Resource Committee, however, the LSIL rate in this study (3.56%) is approximately twice higher, while the ASC-US rate (1.48%) is nearly twice lower (College of American Pathologists. Accreditation checklist, Edition 21, Feb 2000). The rate of unsatisfactory smears in this study (12.15%) is significantly higher than that of the CAP benchmark data (0.50%). The most commonly identified cause for unsatisfactory smears was the absence of cells from the transformation zone (90.18%).

In conclusion, published studies on cervical cancer screening in Cambodia were mainly conducted on HIV-infected population (Raguenaud et al., 2009; Lim et al., 2011; Couture et al., 2012). This study is the first to document the prevalence of abnormal cervical cytology in HIV-negative women in Cambodia, which showed similar rate to that in many Asia Pacific countries. Nevertheless, the remarkably high rate of unsatisfactory smears in this study justifies further improvement in specimen sampling among Cambodian gynecologists. The present study did not assess biopsy follow-up data; as such, the actual prevalence of cervical neoplasia in Cambodia remains unknown.

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