

POTENTIAL PITFALL OF LOCAL VEGETABLE IN MALAYSIA: CYTOMORPHOLOGICAL DIAGNOSIS INTERFERENCES

By

MUHAMMAD HARITH BIN NOR A'SHIMI

Thesis Submitted in Partial Fulfillment of the Requirement for Bachelor of Medical Laboratory Technology (Hons) Faculty of Health Sciences, Universiti Teknologi MARA

DECLARATION

I hereby declare that thesis is my original work and not been submitted previously on currently for other degree at UiTM or any other institution.

..... (Muhamma Harith Bin Nor A'shimi)

DATE: 10/7/ 2015

TABLE OF CONTENTS

DECLARATION ii	
ACKNOWLEDGEMENT iii	
LIST OF FIGURES vi	
LIST OF ABBREVIATIONS vii	
ABSTRACT	viii
CHAPTER	
1 INTRODUCTION1	
1.1	Background of research1
1.2	Problem statement
1.3	Objective of research
	1.3.1 General Objective
	1.3.2 Specific Objective
1.4	Significant of study4
1.5	Research hypothesis
2 LITERATURE REVIEW	
2.1	Pitfalls
2.2	Local vegetables7
2.3	Papanicolaou stain
2.4	May Grunwald Giemsa stain12
2.5	Sputum
2.6	Sputum for cytology16
	2.6.1 Normal cell in sputum
	2.6.1.1 Pulmonary alveolar
	macrophages18
	2.6.1.2 Bronchial epithelial cells 19
2.7	Squamous epithelial cells
2.8	Actinomyces spp
2.9	Atypical Glandular Cell Not Otherwise Specific (AGC-NOS)21

ABSTRACT

POTENTIAL PITFALL OF LOCAL VEGETABLE IN MALAYSIA: CYTOMORPHOLOGICAL DIAGNOSIS INTERFERENCES

Muhammad Harith Nor Ashimi, Nur Sakinah Harun, Mohd Nazri Abu and Wan Shahriman Yushdie Wan Yusoff

Department of Medical Laboratory Technology, Faculty of Health Sciences, Universiti Teknologi MARA (UiTM), Campus Puncak Alam, Selangor, Malaysia.

Introduction: Misdiagnosis of diseases are associated with pitfalls may contribute to false positive or false negative result which then whether will cause delays in diagnosis or an unnecessary treatment thus led to morbidity. This problem can affect the hospital budget because of delay in giving treatment and misdiagnosing. Pitfalls also occur from sample preparation until the screening of the slide. Food contaminants such as local vegetable can cause pitfall in diagnosis by mimicking the benign cell, malignant cell or the microorganism that related to human cells in cytology.

Objective: The aim of this study is to describe morphologies of local vegetable cells, while to compare the morphological characteristics that have resemblances to malignant and normal cytology cells.

Method: Local vegetables were crushed by using mortar and pestle, then smear on glass slides using 'pick and smear' method. Slides are stain with Papanicolaou stain and May Grunwald Giemas stain.

Result and Discussion: Vegetables cells contain nucleus, cytoplasm and cell walls. Some of selected local vegetable cells, such as long bean cell, lady's finger cell, luffa cell, bean sprout and chili can resemble squamous epithelial cell. Long bean cell also resemble fungal element while greater galangal cell can resemble parasitic ova. Besides that, water spinach cell resembles characteristic of AGC NOS and mustard green cell resemble *Actinomyces sp.*

Conclusion: The characteristics of local vegetable cells resemble benign human cells and parasitic ova thus causing pitfalls in diagnosis. Therefore, this study can aid to minimize pitfall by making a catalogue of cytology diagnosis.

Keywords: Pitfalls; food contaminants; mimic cell; local vegetable

CHAPTER 1

Introduction

1.1 Background

Pitfalls defined as misdiagnose of cell morphology and as a result, especially when screening the cytology slides, it will give many complication whether it gives false positive or false negative result. False negative diagnosis can cause delayed diagnosis and treatment while false positive diagnosis can cause unnecessary treatment and morbidity (Luisa et al., 2007). Therefore, due to this problem, it can affect the hospital budget due to misdiagnosis and resulting in delay of receiving the proper treatment or may lead to death (Idowu & Power, 2010).

In addition, study of thyroid FNA shows 65% to 98% and 72% to 100% respectively (Recavarren, 2012). This means that between the percentages there is still a gap for the mistake for interpreting the correct cytology cell. Zero false positive rates are unachievable as a false positive rate of almost 1%, even observed by an experienced cytopathologist (Thivolet-Bejui, 1997). Food contaminant is one of sources that may cause pitfalls for cytologist to diagnose or to identify cells. Food contaminants such as vegetables, fruits, and others may mimic the cells; this because a study showed that a vegetable cell can cause contaminant in diagnostic by mimicking the cytology cells, such as an asparagus cells appear as the invasive lobular breast carcinoma (Chang et al., 2013).