



**PROFILE OF HISTOPATHOLOGY OF CERVICAL CANCER TISSUES IN PATIENTS OF THE DR  
PIRNGADI MEDAN HOSPITAL**

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**ABSTRACT**

Cervical cancer is a malignant neoplasm that happened in the cervical area. Several types of cervical cancer that usually happens in women such as squamous cell carcinoma (SCC), adenocarcinoma, adenosquamous carcinoma and neuroendocrine carcinoma. Therefore, this study aims to determine a descriptive description of the histopathological profile of cervical cancer tissue from patients that registered in the Anatomical Pathology Laboratory at the DR. Pirngadi Medan Hospital, in the period of 2019. The type of our research is retrospective descriptive with the sampling technique, namely total sampling. The sample used was cervical cancer tissue obtained from the biopsy and surgery on patients who were registered from January 2019 to December 2019, totaling 18 samples. Based on the descriptive histopathological description, we found three types of cervical cancer tissue: squamous cell carcinoma (55.5%), adenocarcinoma (38.8%) and adenosquamous carcinoma (5.5%). The neuroendocrine carcinoma type did not find in this present study. Of three types of these cervical cancer, we got that cervical cancer patients are women aged between 36-72 years, with an average age of 54 years.

**Keywords:** *histopathology, profile, cervical cancer, tissue.*

**Introduction**

Cervical cancer is the second most dangerous disease and has the highest morbidity and mortality rates in women and 85% of the causes of death occur in developing countries with lower middle income as many as 500,000 new cases and 250,000 deaths each year (WHO, 2006).

The International Academy of Pathology, Indonesian Division also reported that from 13 hospitals in Indonesia, it was found that cervical cancer was a type of cancer with the highest number of 17.25% followed by breast cancer as much as 12.2% (Heryani, 2018). Meanwhile, in North Sumatra the number of cervical cancer sufferers has increased every year where in 2010 there were 475 cases, in 2011 there were 548 cases, in 2012 there were 681

cases, and in 2014 it increased to 786 cases (Dinas Kesehatan Provinsi Sumut, 2015).

The large number of cervical cancer patients is due to the fact that most cervical cancer patients carry out their examination at the hospital at Stage III or IV (Kementerian Kesehatan RI, 2015). Furthermore, this is due to the lack of public knowledge about cervical cancer. Evidenced by the results of research conducted in the H. Adam Malik Hospital in 2011, it was found that the cancer stage has been already at stage III B as much as 39.5% of the 367 of cervical cancer patients (Arief and Rusda, 2013).

A systematic review study states that if the patient is diagnosed as early as possible, accordingly a better treatment can be done and a better prognosis can be obtained. The stage and type of cervical cancer

are closely related to the invasion and metastasis, where the best treatment for it is the histopathological examination required for the treatment of the sufferer (POGI, 2006).

Histopathology is the result of microscopic assessment of cancer cells based on the number of cells undergoing mitosis, the similarity in the shape of the malignant cell to the original cell and the homogeneity of the cells and the proliferation of epithelial cell malignancies in the stroma or cervical gland. Determination of the histopathological type of cervical cancer is needed in determining the type of cervical cancer. Moreover, a diagnosis based on the histopathological type of cervical cancer tissue can be used for treatment planning and also as initial data which is needed for the exchange of information between various cancer treatment centers, especially in Indonesia. (Purwanti *et al.*, 2014; Agustina, 2015).

Based on the description above, this study aims to observe the histopathological profile of cervical cancer tissue in patients at the Anatomical Pathology Laboratory of the DR. Pirngadi Medan Hospital in the period 2019.

## Materials and Methods

### Research Methods

The methods of this research is a retrospective descriptive study with total sampling technique (Arief and Rusda, 2013). The samples observed were Medical Records of the results of the biopsy and cervical cancer tissue surgery at the Anatomical Pathology Installation in the Dr. Pirngadi Medan Hospital from January to December 2019 with a total of 18 patient samples. Furthermore, the samples that had been registered in the medical record, was made a histopathological image and description by both macroscopically and microscopical examinations (Kristian and Inderiati, 2017).

### Data Analysis

Data analysis includes data classification and descriptive analysis. Data from the results of microscopic analysis are presented in tabular form and analyzed by describing them (Suprpto, 2017). The data collected were tissue numbers, patient codes, microscopic images of cervical cancer tissue, and histopathological types of cervical cancer tissue (Kristian and Inderiati, 2017).

## Result and Discussion

Of 18 cervical cancer tissue samples collected from the medical record, we revealed that cervical cancer patients are women aged between 36-

72 years, with an average age of 54 years. Based on the macroscopic and microscopic data carried out, it was found that the histopathological types of cervical cancer tissue were several types (Table 1).

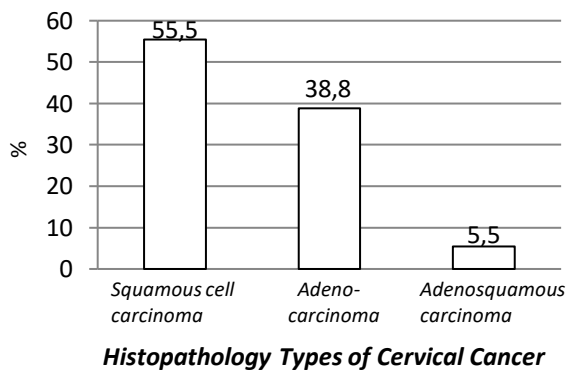
**Table 1.** Cervical Cancer Patients at the Dr Pirngadi Medan Hospital during January to December 2019.

Tissue Sample	Age (year)	The histopathological types of cervical cancer
I	49	<i>Adenokarsinoma</i>
II	56	<i>Non Keratinizing squamous cell carcinoma</i>
III	59	<i>Adenosquamous carcinoma</i>
IV	51	<i>Non Keratinizing squamous cell carcinoma</i>
V	50	<i>Poorly Differentiated of Adenocarcinoma</i>
VI	56	<i>Non Keratinizing squamous cell carcinoma</i>
VII	39	<i>Non Keratinizing squamous cell carcinoma</i>
VIII	55	<i>Moderately Differentiated of Adenocarcinoma</i>
IX	68	<i>Non Keratinizing squamous cell carcinoma</i>
X	36	<i>Well Differentiated of Adenocarcinoma</i>
XI	72	<i>Non Keratinizing squamous cell carcinoma</i>
XII	43	<i>Non Keratinizing squamous cell carcinoma</i>
XIII	51	<i>Non Keratinizing squamous cell carcinoma</i>
XIV	65	<i>Moderately Differentiated of Adenocarcinoma</i>
XV	60	<i>Moderately Differentiated of Adenocarcinoma</i>
XVI	47	<i>Non Keratinizing squamous cell carcinoma</i>
XVII	61	<i>Well Differentiated of Adenocarcinoma</i>
XVIII	56	<i>Non Keratinizing squamous cell carcinoma</i>

**Table 2.** Frequency Distribution of several types of Cervical Cancer in the Dr Pirngadi Hospital Medan for the period 2019.

No.	The histopathological types of cervical cancer	The number of Frequency
1	Non <i>Keratinizing squamous cell carcinoma</i>	10
2	<i>Adenokarsinoma</i>	7
3	<i>Adenosquamous carcinoma</i>	1

Based on the number of registered of the cervical cancer patients data, thus the frequency distribution of the three histopathological types of cervical cancer tissue can be calculated. Of the three types indicated that the histopathological type of cancer tissue with the highest number was the non-keratinizing squamous cell carcinoma with a frequency of 10 (55.5%), and followed by adenocarcinoma type with a total frequency of 7 (38.8%) (Table 2.) Whereas the lowest type was adenosquamous carcinoma, which had 5.5% (Figure 1.) with a frequency of 1. n accordance with previous studies which stated that the two main types of histopathology that occur most often are squamous cell carcinoma in about 85% and adenocarcinoma in about 10-12% of all cases (Vinci, L., 2013). Another study also reported that the most common histopathological types happened as followed: 1. squamous cell carcinoma type; 2. type adenocarcinoma; and 3. adenosquamous carcinoma type (Rasjidi, I., 2009).



**Figure 1.** Percentage of several cervical cancer Histopathology Types

**Macroscopic Histopathology study of cervical cancer tissue**

There are several parameters that must be done to identify cervical cancer tissue macroscopically, such as: tissue size (volume), tissue color, and tissue consistency (solid or cystic) (Kristian and Inderiati, 2017).

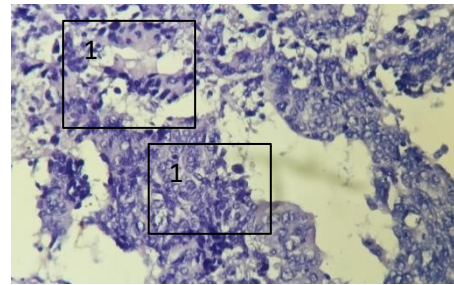
In Table 3, the histopathological examination results of cervical cancer tissue indicated that the average of the all types of cervical cancer observed has a volume size of 1/2 cc, white in color, with a soft and elastic consistencies. A soft and supple consistencies are the typical of tissue generally. Wherein, the macroscopic image of squamous cell carcinoma was a solid white or gray mass. Whereas, Adenocarcinoma was reddish white, and often looks blacker (due to compaction of the nuclei) (Rosai, 2011).

**Table 3.** Makroskopik Histopathology identification of cervical cancer tissue

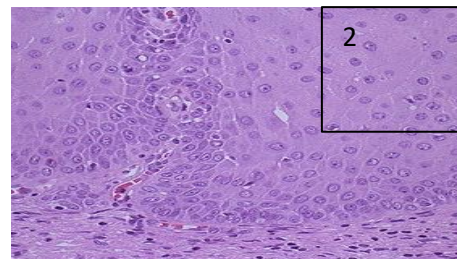
Types of the histopathological	Tissue Sample	Parameter		
		Size	Color	Cosistency
Non <i>Keratinizing squamous cell carcinoma</i>	I	1 cc	White	Soft
	II	1/2 cc	White	Soft
	III	1/2 cc	White	Soft, elastic
	IV	1/2 cc	White	Elastic
	V	1/4 cc	White	Soft
	VI	1 cc	White	Soft
	VII	1 cm	White	Soft
	VIII	1/4 cc	Brownish white	Elastic
	IX	1/2 cc	White	Soft
	X	10x6x3 cm (uterus hasil operasi)	White	Elastic

<i>Adenokarsinoma</i>	I	1/4 cc	Reddish white	Soft
	II	0,5 cm	White	Soft
	III	1/2 cc	White	Soft
	IV	1/4 cc	Grayish white	Soft
	V	1/2 c	White	Elastic
	VI	1/2 cc	White	Elastic
	VII	1/2 cc	Reddish white	Soft
<i>Adenosquamous carcinoma</i>	I	1/2 cc	Reddish white	Soft

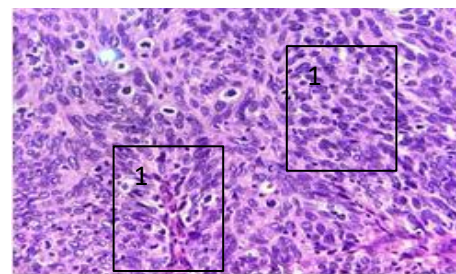
stroma by inflammatory lymphocytes happened; enlarged oval-shaped cell nucleus; abnormal mitotic activity; and coarse or visibly lumpy chromatin (Hellweg *et al.*, 2006). Meanwhile, normal squamous cells have normal ratio N/C (ratio 1: 6); no invasive of the stroma by inflammatory lymphocytes; no cell metastases; normal nuclei with cell morphology have almost the same shape and size, and are regular (Fig. 2b).



(a)



(b)



(c)

**Figure 2.** (a) Microscopic of Non cerratinizng squamous cell carcinoma (code bp/1864/19), 400x. (b) Histology of Epithel Squamous cervical normal, 400x (Klatt, 2009) dan (c). Squamous cell carcinoma, 400x (Literatur: Citra, I., *et al.* 2018). 1. The group of clumping cells with an increased N/C ratio, 2. Normal arrangement with normal N/C ratio. Stain : HE.

### Microscopic Histopathology identification of cervical cancer tissue

Most of the samples in this study were obtained by biopsy, thus the results of the measurements of the tissue were not able to determine the histopathological type of cervical cancer tissue. Therefore, further identification was needed, namely histopathological microscopic analysis.

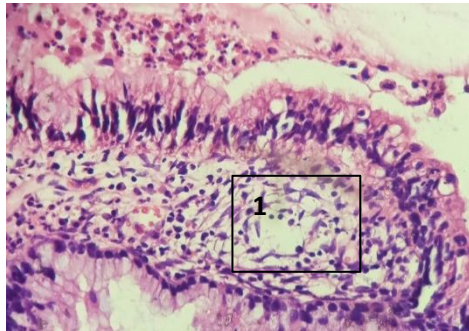
Microscopic identification results exhibit that there were three types of tissue histopathology, namely: squamous cell carcinoma, adenocarcinoma and adenosquamous carcinoma. The histopathological type of squamous cell carcinoma is a type of epithelial cell tumor, which is a flat cell and covering the cervix, with the most common type of malignancy (WHO, 2014).

Based on the results of microscopic examination of cervical cancer tissue showed that squamous cell carcinoma provides an image where in non-keratinized squamous cell carcinoma there is proliferation of thoracic epithelial cells; invasion of the stroma by inflammatory lymphocytes; enlarged nucleus cell; the ratio N/C increases (ratio 1: 1); abnormal mitotic activity; crude chromatin; and keratin (non keratinizing) mass was not found. This is consistent with the theory that non keratinizing squamous cell carcinoma is a nest-like image of squamous cell carcinoma without keratin pearls; terjadi proliferasi sel-sel epitel torak; proliferasi of thoracic epithelial cells occurred; invasion of the

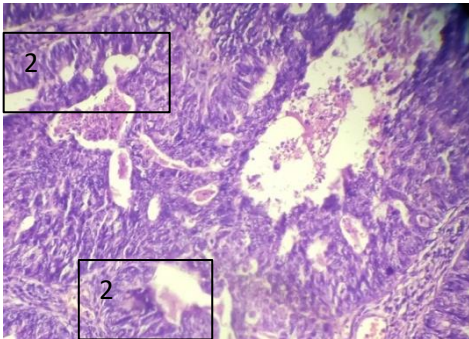


### Adenocarcinoma

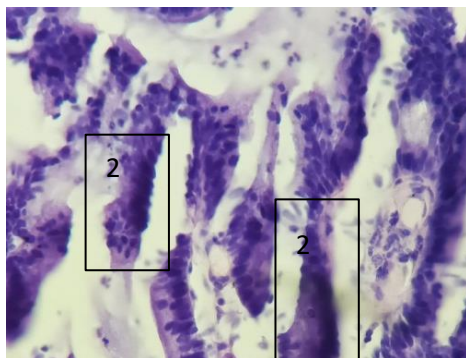
Adenocarcinoma is the second most common histopathological type of cervical epithelial tumor after squamous cell carcinoma (WHO, 2014). This type occurs in the cervical glands usually in the endo-cervical canal.



(a)



(b)



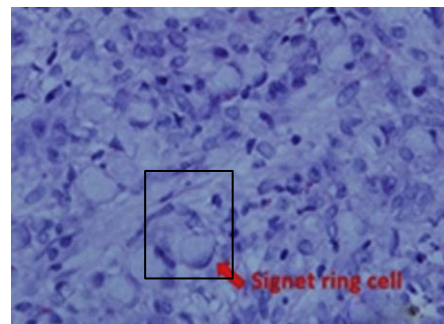
(c)

**Figure 3.** Adenocarcinoma. (a) Microscopic (code Bp/569/19) of Poorly differentiated of adenocarcinoma type or G3, 400x, (b) Microscopic (code Bp/1822/19) of Moderately differentiated of adenocarcinoma type or G2, 200x. (c) Microscopic (code Bp/45/19) of Well differentiated of adenocarcinoma type or G1, 400x. 1. Signet ring cell, G (Grade). Stain : HE.

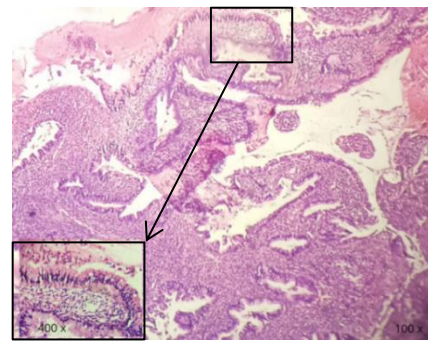
Figure 3 showed three types of adenocarcinoma histopathology, which are divided into three grades, namely: a. Poorly differentiated type of adenocarcinoma (Grade 3) as the most malignant type; b. Moderately differentiated of adenocarcinoma (Grade 2); and Well differentiated of adenocarcinoma (Grade 1). The division of this grade refers to the AJCC / UICC TNM 7<sup>th</sup> Ed. College of American Pathologists (CAP) (Kalof *et al.*, 2012).

Neoplastic glands on adenocarcinoma had seen quite a contrast in Figure 3. The nucleus of the adenocarcinoma is enlarged and elongated, with coarse and dark chromatin; and the cytoplasmic mucin shows relative thinning and shows abnormal mitotic activity (Pirog, 2017).

Poorly differentiated adenocarcinoma (Figure 3.a) is the most malignant type of adenocarcinoma. This type of cancer is characterized by the proliferation of epithelial cells with a round shape with a signet ring cell appearance; N/C ratio increased; Crude chromatin; eosinophilic cytoplasm and stroma with connective tissue infiltration of inflammatory Polymorphonuclear neutrophilic leukocyte cells. These are the same as previous research which states that signet ring cells in adenocarcinoma are rare cases and most of them are metastatic cancers originating from other organs such as the stomach, breast, colon / rectum, or ovaries (Yoon, A., *et al.* 2011 ; Wang, Y., *et al.* 2018).



(a)

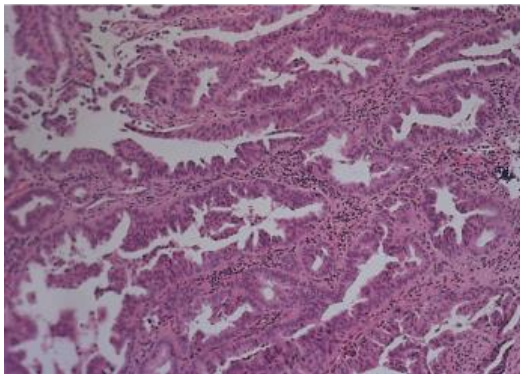


(b)

**Figure 4.** Microscopic of poorly differentiated of adenocarcinoma with signet ring cell: (a) 200x (Wang, 2018) dan (b) Microscopic of sample code Bp/569/19 100x dan 400x. Stain: HE

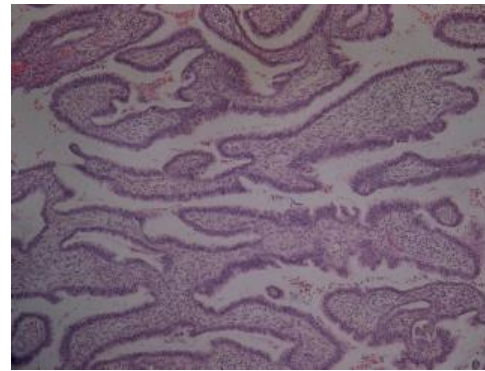
Figure 4 indicated that the appearance of signet ring cells in the poorly differentiated of adenocarcinoma. At 100x magnification (Figure 4.b) the globular shape was seen in the sample, while at 400x magnification it was displayed more clearly the tissue structure and appearance of the signet ring cell.

Moderately differentiated type of adenocarcinoma (Figure 3.b) or called moderate differentiation (G2), characterized by thoracic epithelial cells with an enlarged nucleus and a proliferation of glands with a cribriform structure happened. Thus the same as the meaning of moderate, which means still in a moderate condition where the cells look more abnormal than well differentiated and grow a little faster but are not classified as most malignant. (Schoolland, M., *et al.* 2002).

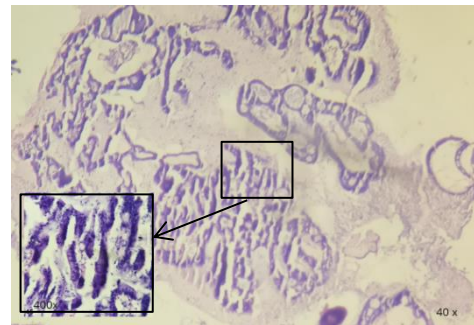


**Figure 5.** Microscopic of *Moderately differentiated of adenocarcinoma*. Stain: HE 100x (Schoolland *et al.* 2002).

Well differentiated of adenocarcinoma (Figure 3.c) or Grade 1, characterized by glands that has proliferated and had disorganization; the epithelial lining of the gland is composed of proliferative thoracic epithelial cells, the stroma is composed of fibrous connective tissue; a type of cell with slow growth of cancer cells; the microscopic image looks very similar to normal cells and is less likely to spread than at higher levels (Figure 6).



(a)



(b)

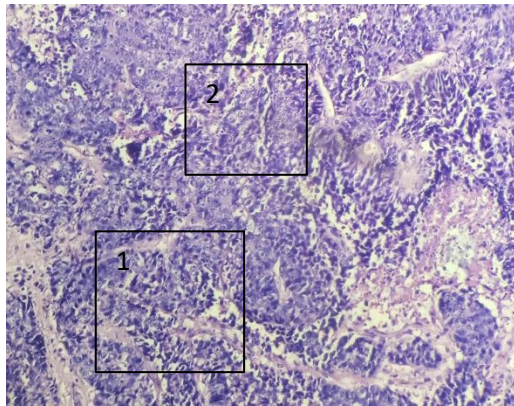
**Figure 6.** Microscopic of Well differentiated of adenocarcinoma: (a) 100x (Schoolland *et al.* 2002) and (b) microscopic of cervical cancer patient with code Bp/45/19 40x dan 400x. Stain: HE.

#### ***Adenosquamous carcinoma***

The adenosquamous carcinoma type belongs to the epithelial tumor type or called a mixed tumor, due to mixed between the squamous cell carcinoma and adenocarcinoma types. In the present study there was only one sample, which is with the code bp/1282/19.

Adenosquamous cell carcinoma contains endocervical glands and proliferation of ectocervical epithelial cells (Figure 7); enlarged cell nucleus; and crude chromatin. Endo-cervical gland is a component of adenocarcinoma. While, the proliferation of ectocervical epithelial cells is a component of squamous cell carcinoma. Where the two components are mixed in one tissue. Another study found that Adenosquamous carcinoma is a carcinoma that has components of squamous cell carcinoma and adenocarcinoma each of at least 10% (Rosai, 2011).





**Figure 7.** Microscopic (code bp128219) *Adenosquamous cell carcinoma* 200x. 1. endocervical glands, 2. Proliferation of ecto-cervical epithelial cells (Dokumentasi pribadi). Stain: HE.

### Conclusion

We found that there were three types of cervical cancer in the Dr Pirngadi Medan Hospital, which the most types of squamous cell carcinoma (55.5%), then adenocarcinoma (38.8%) and the least was adenosquamous carcinoma (5.5%).

### Acknowledgment

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