

A STUDY ON CLINICAL, SEROLOGICAL CHARACTERISTICS OF SECONDARY SYPHILIS PATIENTS AT CAN THO HOSPITAL OF DERMATO-VENEROLOGY IN 2021

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ABSTRACT

Background: Syphilis is a chronic infectious disease caused by *Treponema pallidum*. Classically, syphilis is classified into 4 stages including primary, secondary, latent and tertiary syphilis. Many of its manifestations are cutaneous, making it of interest and importance to dermatologists, especially as morbidity from syphilis rises in the developed world and continues in the developing world. **Objectives:** 1). To describe the clinical characteristics of secondary syphilis patients at Can Tho Hospital of Dermato-Venereology in 2021; 2). To describe the serological characteristics of secondary syphilis patients at Can Tho Hospital of Dermato-Venereology in 2021. **Materials and methods:** A cross-sectional descriptive study was carried out on 52 secondary syphilis patients who were treated at Can Tho Hospital of Dermato-Venereology. **Results:** Lesions of macules, papules, pustules, scales, mucous patches were 73.1%, 55.8%, 0%, 23.1%, 11.5%, 7.7%, respectively. The highest percentage of sites was on the palms and/or soles with 86.5%. Serum RPR titer had the highest rate was R256, accounting for 57.7%, most of the patients had serum TPHA titer of R1280, accounting for 73.8%. **Conclusions:** Secondary syphilis patients have a variety of

clinical manifestations and affected sites, most of serum RPR and TPHA titers are usually high with values of R256 and R1280, respectively.

Keywords: *Secondary syphilis, RPR, TPHA, serological syphilis.*

I. INTRODUCTION

Syphilis is a sexually transmitted disease caused by the bacterium *Treponema pallidum* (spirochete syphilis). The disease is transmitted mainly through genital tract, childbirth and blood transfusion. The clinical signs and symptoms of syphilis were so variable, it is classified into four stages including primary, secondary, latent and tertiary syphilis [13], [14]. Before the advent of serological tests, it was difficult to diagnose accurately patients with syphilis. We were often confused with other entities, especially GM III [10], [11]. Syphilis is a systemic disease that manifests in many organs of the body such as skin, mucous membranes, muscles, bones, internal organs, especially the heart and nerves, according to the progression of the disease. If it is left untreated, syphilis can be passed on to the next generation called “congenital syphilis”. In addition to being transmitted by sexual contacts and then spreading to society, the disease will leave dangerous complications for the patients, sexual partners and the children. [1], [4].

In 2013, The World Health Organization estimated that there were about 554 million new cases each year around the world with secondary syphilis accounted for 8.7%, especially increasing in the same-sex relationship groups [6]. In Ho Chi Minh City, the situation of secondary syphilis is increasing. According to the data of the Ho Chi Minh City Hospital of Dermato-Venereology, it was 39% in 2011, 4.8% in 2012 and 6% in 2013 [9]. In recent times, not many studies have been conducted on secondary syphilis, most of the articles have been reported about other sexually transmitted infections. To contribute to the knowledge of its clinical features for early disease diagnosis to prevent the spread and unfortunate complications for the patients and the community, we carried out the study “*A study on clinical, serological characteristics of secondary syphilis patients at Can Tho Hospital of Dermato-Venereology in 2021*” with two objectives: 1). To describe of clinical features of secondary syphilis patients at Can Tho Hospital of Dermato-Venereology in 2021; 2). To describe of serological characteristics of secondary syphilis patients at Can Tho Hospital of Dermato-Venereology in 2021.

II. MATERIALS AND METHODS

2.1. Study population and setting

2.1.1. Study population

All patients with syphilis came and were treated at Can Tho Hospital of Dermato-Venereology in 2021.

2.1.2. Inclusion criteria

The patients were diagnosed with secondary syphilis and treated at Can Tho Hospital of Dermato-Venereology in 2021. Secondary syphilis serology results: with positive RPR with dilution $>1/4$ and positive TPHA.

Skin-prick test: negative.

2.1.3. Exclusion criteria

The patients were diagnosed with syphilis but not secondary syphilis such as primary, latent or tertiary syphilis.

The patients did not adhere to the schedule of treatment as well as follow-up visits.

2.2. Study methods

2.2.1. Study design

A cross-sectional descriptive study

2.2.2. Sample size and sampling methods

Sampling methods: convenience sampling

Sample size: the sample size is calculated with the following equation:

$$n = Z_{1-\frac{\alpha}{2}}^2 \frac{px(1-p)}{d^2}$$

In which: n: the smallest sample size

$$Z = 95\%, Z_{1-\frac{\alpha}{2}} = 1,96$$

p: syphilis serum titer ratio after 12 months of treatment. According to Nguyen Thi Thanh Tho (2016) was 96,2% [12], choose $p = 0,962$.

d: the allowable error in study is 5%, $d = 0.05$.

Thus $n = 52$. The estimated sample size is 52 patients.

2.2.3. Study contents

Study general features such as age, gender, place of life, education, career, marital status. Study clinical characteristics of secondary syphilis: syphilis rash, wet papules, mucosal patches combined with skin lesions, mucous lesions and sites.

Study serological characteristics of secondary syphilis: perform a quantitative VDRL test. VDRL is considered positive when the titer is $>1/4$ and perform a qualitative TPHA test by TPHA passive erythrocyte agglutination technique.

2.2.4. Statistical analysis

Analyzing data with SPSS 16.0. Qualitative variables are presented as frequencies (percentage). Quantitative variables with no diagnostic distribution are presented as the median (interquartile range). To compare 2 or more ratios, we use Chi-squared or Fisher's test, $p < 0.05$ is considered to be statistically significant.

2.2.5. Ethics Approval

All patients signed an informed consent before participating in the study.. Patient information was encrypted and kept confidentially. Data collection sheets, file files were stored carefully. Patients had the right to refuse to participate in the study without affecting the quality of examination and/or treatment. The study only has research purposes and no harmful effects on participants.

III. RESULTS

Table 1. The rate of cutaneous-mucous lesions in secondary syphilis

Skin and mucous membrane lesions	Frequency (n)	Rate (%)
Macular lesions	38	73.1
Papular lesions	29	55.8
Pustular lesions	0	0
Scaly syphilis lesions	12	23.1
Wet papules	6	11.5
Mucosal patches	4	7.7
Combined lesions	8	15.4

Comment: Macular lesions of secondary syphilis accounted for the highest rate of 73.1%, followed by papular and scaly lesions (55.8% and 23.1% respectively). Combined cutaneous and mucosal lesions accounted for 15.4% (Table 1)

The highest percentage of sites was on the palms and/or soles with 86.5%, more one affected sites accounted for 80.8%, the lowest was the lesions which were on oral mucosa accounted for 1.9% (Table 2).

Table 2. The rate of cutaneous-mucous lesion sites

Sites of cutaneous-mucous lesions	Frequency (n)	Rate (%)
Face	6	11.5
Trunk	35	67.3
Palms/Soles	45	86.5
Genitals	14	26.9
Oral mucosa	1	1.9
Anus	14	26.9
More one affected sites	42	80.8

Table 3. The rate of non-cutaneomucous lesions in secondary syphilis

Non-cutaneomucous lesions	Frequency (n)	Rate (%)
Lymph node	20	38.5
Hair loss	3	5.8
Combined lymph node and hair loss	1	1.9

Comment: Lymph nodes appeared in 38.5% of patients with secondary syphilis, hair loss was 5.8%, and combined lymph node and hair loss was 1.9% (Table 3).

Table 4. The rate of serum PRP titer pre-treatment

RPR	Frequency (n)	Rate (%)
R2	2	3.8
R4	1	1.9
R8	1	1.9
R32	2	3.8
R64	5	9.6
R128	11	21.2
R256	30	57.7
Total	52	100

Comment: Most of the patients had serum RPR titer from R64-R256, serum RPR titer with the highest rate was R256, accounting for 57.7% (Table 4).

Most of the patients had serum TPHA titer of R1280, accounting for 73.8%, the lowest rate was R160, accounting for 3.8% (Table 5).

Table 5. The rate of serum TPHA titer pre-treatment

TPHA	Frequency (n)	Rate (%)
R160	2	3.8
R320	8	15.4
R640	4	7.7
R1280	38	73.1
Total	52	100

IV. DISCUSSION

The most common clinical form is macular secondary syphilis lesions with the highest rate of 73.1%, followed by papular and scaly lesions with the rate of 55.8% and

23.1%, respectively. Combined cutaneous-mucous lesions accounted for 15.4%. According to a study by Nguyen Thi Thanh Tho (2017), the highest rate of macular syphilis lesions was 38.6%, scaly syphilis lesions were 6.6% [12]. The study of Park et al (2014) showed that macular syphilis lesions accounted for the highest rate (45%) [5], this is also consistent with our study.

In our study, most of the skin lesions in secondary syphilis patients were on the palms and/or soles (86.5%), in which the lesions combined on more than one affected site also accounted for a high proportion (80.8%), followed by the trunk accounted for 67.3%. According to Nguyen Thi Thanh Tho (2017), lesions in the palms or soles accounted for 21.7%, especially lesions in many locations accounted for 32.1% [12]. Author Manriquez et al (2014) reported that the sites of skin lesions on the palms or soles accounted for 35%, this rate is lower than our study, possibly due to the difference in the sample size [7].

In cutaneo-mucous lesions, the lymph node is a common symptom in secondary syphilis cases. In our study, 20 cases had lymph nodes, accounting for 38.5%. The inguinal lymph nodes accounted for 34.6%, and 17.3% had both inguinal and axillary lymph nodes. Aubert's study (2015) commented that lymph nodes in patients with secondary syphilis accounted for 33% [8]. Author Rysgaard Carolyn (2014) found that there were lymph nodes in 31% and author Nguyen Thi Thanh Tho (2017) reported that lymph node symptoms accounted for 28.3%, this is almost similar to our study [12], [2]. Hair loss in patients with secondary syphilis is often characterized by alopecia areata that was resembling "termites". In our study, there were 3 cases of alopecia areata and alopecia totalis in 3 cases (5.8%).

Regarding serum titers, our study recorded that the lowest serum RPR titer was $\frac{1}{2}$ (3.8%) and the highest was $\frac{1}{256}$ (57.7%), the serum RPR titer $>1/32$ was 88.5% and RPR $\leq 1/32$ is 11.5%. This result is similar to the study of Yang et al (2014) showing that the RPR titer $>1/32$ accounted for 86.9% [3]. However, it was higher than the result of Spagnuolo et al (2018) that found in the group of secondary syphilis patients, the rate of RPR titers $>1/32$ accounted for 58% [15]. This difference is not much, possibly due to the technique and time of testing. For serum TPHA titers, our study recorded that the lowest serum TPHA titer of $\frac{1}{160}$ (3.8%) and the highest and most common titer of $\frac{1}{1280}$ (73.1%). In the study of Spagnuolo et al (2018), in the group of secondary syphilis patients pre-treatment, the rate of serum RPR titers $> 1/5120$ accounted for 81% [15]. This difference may be due to the difference in sample size and different study times.

V. CONCLUSIONS

Secondary syphilis patients at Can Tho Hospital of Dermato-Venereology have a variety of clinical manifestations and affected sites. The most common symptom and affected sites were macular lesions and palms and/or soles. Most serum PRP and TPHA titers are usually high with values of R256 and R1280, respectively.

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