Yaws: Neglected and Abandoned? Time to Re-Emerged

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Abstract: Yaws, a disease caused by *Treponema pallidum subspecies pertenue* infection, is a neglected tropical disease. Until now, yaws is still one of the public health problems in South East Asia, even though it had been forgotten before. But, recently it has re-emerged once again. Yaws becomes the aim of the mass-treatment eradication of World Health Organization (WHO) by 2020 through the mass-treatment program. The main target of the success of this campaign is a good knowledge of the disease epidemiology. We undertook a review of the historical trends and new information from endemic countries, with a point of view to assessing the state of knowledge about yaws. The plague of yaws now exists in Africa, Asia, and the South Pacific. About 12 countries establish as endemic countries, one of them is Indonesia that located in South East Asia region. Between 2008 and 2012 more than 300,000 new cases into the WHO. Based on Ministry of Health Regulation Republic of Indonesia No. 8 in 2017 on eradication of yaws, it is necessary to administer continuous, effective, and efficient program. Several dilemmas of yaws are low levels of reporting, potential misdiagnosis, and limited documentation on the prevalence of asymptomatic infections. The current data is likely to underestimate the agonize of the disease. Thereupon, more effort is needed to improve the current interactive data, that is likely to have positive vibes on yaws eradication plan.

1 INTRODUCTION

Yaws or also called *framboesia, pian, buba, paru, parangi*,(Perine et al., 1984; Marks et al., 2015) or *patek* (GREEN and HARMAN, 1986) is an infectious disease caused by *Treponema pallidum subspecies pertenue* (*T. pallidum subsp. pertenue*), also have a close taxonomy with *Treponema pallidum subspecies pallidum* (*T. pallidum subsp. pallidum*), as syphilis causes.(Marrouche et al., 2012) The yaws term was first introduced by the Dutch physician Willem Piso in the seventeenth century to describe the clinical picture of the disease in South America from the term ulcers which in Carib are yaya.(Piso and Marcgrave, 1648) Its clinical picture resembling raspberries, so it is also known as yaws derived from the French "framboise" which means raspberry.(Marks et al., 2015)

The clinical features of yaws are divided into several stages, namely primary, secondary, latent, and tertiary stages. The available serological tests cannot distinguish between yaws and syphilis. Though yaws has different characteristics with syphilis, such as in the form of basic ulcers of dirty lesions, the size could reach 5 cm, pain, and itching, and have a predilection in lower limbs. If left untreated, the lesion may become chronic and destructive,(Marks et al., 2015) causing potentially disability, pain, and social problems in the patient.(Marrouche et al., 2012) Other things that distinguish yaws with syphilis include geographic distribution, patient's age characteristics, non-venereal type of transmission, that is transmitted through skin contact rather than sexual contact, and the clinical picture of the disease.(Mitja et al., 2013; Marks et al., 2015)

Yaws generally attacks children who live in the tropical area.(Marrouche et al., 2012; Marks et al., 2015) This disease is still a public health problem in Indonesia as a tropical country in terms of eradication of yaws. The World Health Organization (WHO) aims to eradicate yaws by 2020, which consists of an initial mass treatment of endemic communities followed by surveys every 6 months to actively detect and treat remaining cases and their contacts.(Marks et al., 2015) The changed of use of a single oral dose of azithromycin from benzathine penicillin injection has made mass treatment more

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feasible and is currently recommended in areas where yaws is prevalent. Due to benzathine penicillin injection therapy has several disadvantages such as causing pain in the patient, difficulties of drug storage process, and limited supply so that oral azithromycin is preferred. Indonesia is the only country in Southeast Asia to report cases of yaws in WHO report year 2012.(International Symposium on Yaws and Other Endemic Treponematoses, 1985) Based on Ministry of Health Regulation Republic of Indonesia No. 8 in 2017 on eradication of yaws, it is necessary to administer the continuous, effective, and efficient program.(The Ministry of Health Republic of Indonesia, 2017) One of the key determinants of the success of the eradication campaign is a good understanding of the disease epidemiology, particularly its geographic distribution and risk factors. Based on the description above, this review hopefully could be an insight of accurate of yaws specifically in Indonesia region.

2 THE ORIGIN OF YAWS

Yaws has been known since the early 16th century that happened to slaves in Spain. In the 17th century, the disease was reportedly suffered by slaves in North America. In the early 1950s, an estimated 50-150 million people worldwide experienced yaws. (World Health Organization, 2013) Approximately 75% of patients are children aged less than 15 years (peak incidence occurs in children aged 6-10 years). Men and women have the same opportunities for this disease. (World Health Organization, 2006)

At least 90 countries have reported endemic yaws,(Hackett, 1989; World Health Organization, 2013.) especially in Africa with an incidence rate of over 10,000 cases per year, and the highest incidence is reported in four countries: Ivory Coast, Ghana, Cameroon and the Congo reaches more than 100,000 cases per year.(Hackett, 1989) In Asia, however, yaws was reported in areas of India, China, Thailand, Cambodia, Laos, Malaysia, and Indonesia.(Kazadi et al., 2014)

In the mid-1950s and early 1960s, WHO undertook a worldwide mass treatment of yaws around the world with benzathine penicillin injection treatment that dramatically decreased the prevalence of the disease.(Mitja et al., 2013) Since 1990, reporting to WHO was not mandatory because it did not become endemic anymore in many countries, so, epidemiological data becomes very limited. But, based on the WHO report up to 2013, 12 countries were reportedly endemic, consisting of 8 countries in Africa namely Benin, Cameroon, Central African Republic, Ivory Coast, Republic of Congo, Democratic Republic of Congo, Ghana, and Togo; three countries in the Western Pacific region namely Vanuatu, Papua New Guinea, and the Solomon Islands; and one country from the Southeast Asian region, Indonesia (Figure 1). (Mitja et al., 2013; Kazadi et al., 2014)

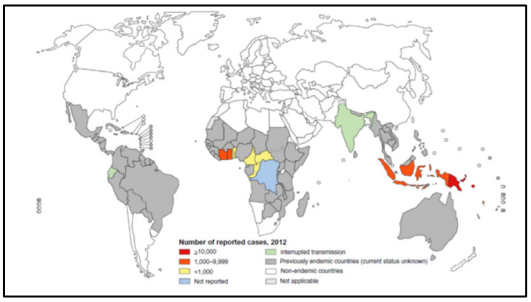

Figure 1. Worldwide distribution of yaws in 2012.(Kazadi et al., 2014)

In 1950, according to WHO, cases of yaws in Indonesia occurred in Aceh, Jambi, Bengkulu, South Sumatra, East Java, and most of Eastern Indonesia covering Nusa Tenggara, Sulawesi, Maluku and Papua.(World Health Organization, 2006) The decrease of yaws cases prevalence in Indonesia was significantly reported in 1995, from 2,210 per 10,000 population in 1985 to less than 1 case per 10,000 population in 1995. In the report, it was found that the number of cases in Java and Sumatera in 1995 was less than 0.1 cases per 100,000 residents; while in East Indonesia, Papua, Maluku, East Nusa Tenggara, and Sulawesi, the number of cases of yaws was still more than 1 case per 100,000 population.(General Directory of Disease Control and Health Environmental, 2005) In 2004, there were 4,015 cases of yaws in Indonesia. While in the period of 2008, there was an increment of yaws cases became 5,926 cases in Indonesia, with the highest prevalence in East Nusa Tenggara, Maluku, and Papua. Figure 2 shows the spread of yaws cases especially in Indonesia, that prominently found in the province of East Nusa Tenggara. During the period 2010-2013, reported cases of yaws as many as 13,084 cases.(Mitjà et al., 2015)

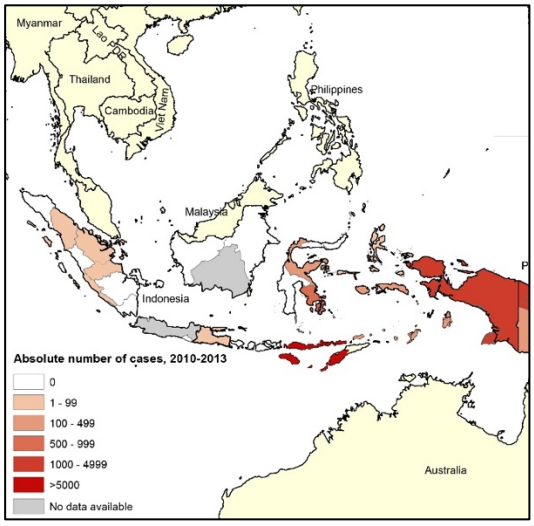

Figure 2. The distribution of yaws in South East Asia in period of 2010-2013.14

3 NEW SPIRITS FOR ERADICATION

In 2014, there were 1,521 cases of yaws reported in Indonesia, particularly in Banten, East Nusa Tenggara, Southeast Sulawesi, Maluku, Papua, and West Papua provinces.(The Ministry of Health Republic of Indonesia, 2017) The 2012 serological survey results in several districts/municipalities indicated that the prevalence of yaws ranged from 20-120 per 100,000 population aged 1-15 years. Some areas with a history of endemic of yaws, such as Aceh, Jambi, and South Sumatra provinces, did not report any presence of yaws, but it could not ascertain those regions as free area of yaws.(The Ministry of Health Republic of Indonesia, 2017) Indonesia has point of target for yaws eradication by 2017 (following global target) using active and passive case detection and prompt treatment; some of the major problems faced by the program include the difficulty of reaching endemic communities scattered over many small islands.

Indonesia has a combined yaws and leprosy programme which functions under the Sub-Directorate of Leprosy and Yaws. This allows for the use of common resources to detect and manage both diseases at national, provincial and district levels.

Recently, in the early year of 2017, several regions in Indonesia have been visited by WHO team to assess eradication efforts and review the implementation of the national elimination plan. After achieving interruption of transmission of yaws, a country needs to report zero yaws cases for three consecutive years and provide serological evidence to support the interruption of transmission in children aged 1-5 years in order to request yaws-free status by WHO. Indonesia and East Timor are the only two remaining yaws-endemic countries in WHO's South-East Asia region.World Health Organization, 2006 Furthermore, in West Java, Indonesia, yaws patients were detected in Baduy village people, the disease itself are prone to the communities live there, since the people still have culture and habit of not aware of the hygiene of the environment. Thus, seeing those phenomena, the eradication program of yaws should have more concern related with the prevention and management.

4 CONCLUSIONS

The accurate data is likely to exclude underestimation of the agonizing of the disease. Therefore, more works are needed to improve the current interactive data, that is likely to have better on the impact on yaws eradication plan, to emerge another point of view of yaws. Then, yaws should not be forgotten, because of this disease still around us.

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