International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531
(Print & Online)

http://gssrr.org/index.php?journal=JournalOfBasicAndApplied

Diagnostic Value of Un-Growing Body Weight and Fail to Grow in Children Tuberculosis Diagnostic Base on Indonesia Modifications Scoring System

Syamsa Latif[a]*, Suryani As'ad[b], Burhanuddin Bahar[c], Andi Armyn Nurdin[d]

[a]*Graduate Student, Program in Medical Science, Medical Faculty of Hasanuddin University*

[b]*Faculty of Medicine, Hasanuddin University, Graduate School Lecturer of Hasanuddin University*

[c]*Faculty of Public Health, Hasanuddin University, Makassar Indonesia*

[d]*Medical Faculty of Hasanuddin University, Dean of the Faculty of Health Sciences UIN Makassar*

[a]*Email: Armyn_nurdin@yahoo.com*

[b]*Email: Suryani_fkuh@yahoo.com*

[c]*Email: ninaisywara14@yahoo.co.id*

[d]*Email: syamsalatief@yahoo.com*

Abstract

In developing countries, the difficulty of diagnosis of TB Children are not resolved by the application of the scoring system. Application of new diagnostic tool is limited because it requires high cost and technology. As a result, developing countries still bear the heavy burden of TB Children.

Objective: To determine the diagnostic value of the weight does not go up and failure to thrive in the diagnosis of TB Toddler unfounded Indonesia Modified Scoring System. This study was an observational study with retrospective cohort design. Subjects were toddlers who were enrolled in the Registry of TB Children in the clinic in the period 2014-2016. Retrospective cohort study KMS explore the subject of research to identify the presence of markers of body weight did not rise (T) and failure to thrive (2T) as a baby (0-12 months).

---

* Corresponding author.

Results indicated that after checking the Register of TB Kids 8 PHC then found as many as 127 TB patients Toddlers who met the inclusion criteria of the study. Everything (total sampling) have been selected as sample, but does not meet the pre-specified sample of 153 toddlers. Retrospective cohort study markers of T and 2T explore research on the subject that have KMS. From (84.2%, 101/127) the subject of research, it signified T and 2T was found in 101 (100%) during the study subjects aged 1-12 months. So the research subjects had impaired growth occurs in infancy, including the good nutritional status. In conclusion, weight is not up (T) and failure to thrive (2T) has a high diagnostic value and has been used as a parameter in the implementation of SSIM. Markers of T and 2T can be used as a proxy by the physician in the diagnosis of tuberculosis Toddlers, both clinical diagnosis based on clinical criteria or scoring systems and diagnostic confirmation. If so, a major contribution "the seven star doctors" in the discovery of TB Toddlers. The impact, the target of elimination of TB in 2050.

Keywords: weight loss does not rise; failure to thrive; scoring system; a toddler; the seven star doctors; elimination of TB.

1. Introduction

Tuberculosis (TB) is a major cause of morbidity and mortality of children in TB endemic countries. Difficulties in diagnosis of TB Children are not resolved by the application of the system of diagnosis, either using clinical criteria and the scoring system. Even more difficult to diagnosis confirmation. Application of new diagnostic tool is limited because it requires high cost and technology. As a result, TB endemic countries were classified as well as the developing countries are still a heavy burden of TB Children. The proportion of the burden of TB Children around 15-20%, could even reach 40% of total TB [1]. Indonesia including TB endemic countries. 2014 shift so Men- occupied China ranks second after India. TB burden is heavy with a prevalence of 647 / 100,000 population and the incidence of 399 / 100,000 population, higher than in previous years [2]. This means that the source of infection is quite a lot, resulting in intense exposure in the community of children. Toddlers as a subgroup of high-risk children are infected, with all the consequences that may occur throughout life. Surely this can be prevented with early detection and governance Toddlers like TB and latent tuberculosis infection (ITBL).

The implementation of TB diagnosis in children overall (0-15 years), without stratification was less effective. More commonly found children aged 5-14 years (WHO, 2011) resulting in under diagnosis in infants, toddlers whereas at higher risk than children aged 5-14 years [3]. The intervention would be more effective if carried out on high-risk groups ie infants [4].It has been three decades WHO recommends evaluation of infants with a history of contacts at home, but it is rarely implemented in TB endemic countries [5]. Toddler with a history of contacts with the signs and symptoms should be evaluated the possibility of TB. In addition to the contact history, symptoms or other signs are loss of weight or failure to thrive [6,7]. Symptoms or signs can be used as the basis for implementing screening (screening) as recommended by the WHO. Filtering based approaches symptoms (symptom-based screening approach) has been shown to increase TB case detection and prevention of TB incidence Children Son [5]. Research [5] based on symptoms (symptoms) contact history, whereas this study based on the sign (sign) weight does not rise (weight loss) given the symbol T and failure to thrive (failure

to thrive) by symbols 2T [8]. The goal was different, Triasih examine the whole child (0-15 years), whereas this study only examined toddlers (0-60 months). This study is in line WHO recommendations that emphasize the need for research of new diagnostic tools for small children (young child) and child malnutrition [9] . This study chose a population of toddlers with 2T mark. Toddlers as a research subject is positioned in a holistic, unique and specific with minimizing invasive (child friendly). Nevertheless, the study is expected to determine the diagnostic value of weight does not rise (T) and failure to thrive (2T) in the diagnosis of TB Toddler unfounded Indonesia Modified Scoring System (SSIM).

2. Materials and Methods

Location and Time Research. This research was conducted in Sidenreng Rappang, South Sulawesi, Indonesia, in the period January 2015 to September 2016. Research design. Observational study with retrospective cohort design. Population and Sample Research. The target population is children aged 0-60 months (toddlers) who live in the eight health centers working area of the health center: Pangkajene, Lawawoi, Empagae, Baranti, Rappang, Barukku, and Manisa, Sidenreng Rappang, South Sulawesi Province, Indonesia. Affordable population is the target population with TB Toddler, received treatment with DOTS strategy and is registered in the Register of TB Children's Health Center. Affordable populations met the inclusion criteria were selected as sample. It is hoped the research sample of 153 toddlers [10,11]. The research sample was obtained by total population.

The inclusion criteria were children aged 0-60 months (toddlers), diagnosed with tuberculosis and received treatment with DOTS strategy, residing in research location, no serious illness, do not suffer from a congenital abnormality, a parent or guardian is willing to include her toddler toddlers in the study until completion stated in the informed consent / approval Once explanation (PSP). KMS retrospective cohort study explore the subject of research to identify a marker of their weight does not go up and fail to grow as a baby (0-12 months). BB does not rise given the symbol T is weight infants do not reach the minimum weight gain (KBM) according to age in months compared to the previous month weight. Failure to thrive given the symbol 2T is overweight toddlers do not go up twice in a row in monthly weighing despite adequate nutrition administered for one month. Characteristics of research subjects and the measured variables obtained by using research instruments. In addition to secondary data obtained from health centers. If required, the primary data-interviewing respondents. Univariate analysis describes the characteristics of the study subjects. Not performed bivariate and multivariate analysis because it is not relevant to the purpose of research. Statistical analysis is relevant is quartile analysis to determine the distribution of research results by quartiles. Manually analysis is still needed, whereas computerization = use the program as needed.

3. Results

After checking the Register of TB Kids 8 PHC then found as many as 127 TB patients Toddlers who met the inclusion criteria of the study. Everything (total sampling) have been selected as sample, but does not meet the sample set previously at 153 toddlers. KMS research subjects have made a duplicate. Who do not have KMS do data tracking weight, then created KMS.

The data source is the book Weighing Results IHC or Poskesdes Registration Book. Finally, as many (79.5%, 101/127) research subjects may have KMS, thus higher than the national Toddler KMS ownership by 65% [12]. KMS Ownership of 79.5% of research subjects fairly representative.

Characteristics research subjects can be seen in Table 1.

Table 1: Respondent characteristics in Sidrap Regency, 2015-2016

General characteristics		
	n=127	%
Age (month)		
0 – 6	1	0.9
7 – 24	27	21.2
25 – 36	35	27.5
37 – 59	64	50.4
Sex : Male	64	50.0
Female	63	50.0
BCG vaccine (n=53)		
Positive	39	73.6
Negative /unknown	14	16.4
Specific characteristics		
Contac history: positive	103	81.1
Negative	24	18.9
Tuberkulin test (n=112): Positive	51	45.5
Negative	61	54.5
Nutritional status : Less	96	75.6
Good	31	24.4
Bone fever	78	61.4
Chronic cough	65	51.2
Neck Limfadenopati	110	86.6
Joint swelling	0	0
Toraks photo (n=71): sugestive TB	66	93.0
Not sugestive TB	5	7.0

Furthermore, the data retrieval monthly weight change research subjects. By looking at the growth curve KMS research subjects, the obtained data is not rising incidence of body weight (T) and failure to thrive (2T). Search is limited in infancy (0-12 months) the research subjects. The search results can be seen in Table 2

Table 2: Distribution of Body Weight Changes by Age in Sidrap, 2015-2016

Age (month)	The changes of body weight			Number (%)
	T (%)	N (%)	M (%)	
1 – 6	273 (45.0)	195 (32.2)	138 (22.8)	606 (100.0)
7 – 12	318 (52.5)	165 (27.2)	123 (20.3)	606 (100.0)

T = Body weight no change , N = body weight change , M – no data (missing)

4. Discussion

Table 2 shows the prevalence of markers of T research subjects who have KMS by age group 0-6 months (young infants, young infant) and the age group of 7-12 months (old infant, late infant). In the group of young infants, the incidence proportion T of 45.0%, meaning each research subject has experienced two times the incidence of T. In the group of older infants T incidence proportion of 52.5%, meaning each research subject has experienced three times the incidence of T. Clearly that the study subjects had experienced 2-3 times the incidence of T during the first year of life. This fact proves that the growth disturbance KMS research subjects that have already occurred as a baby (0-12 months). Owners KMS research subject as much as 79.5% is quite representative. Analysis quartile put this figure in the 4th quartile, high value. If done extrapolation, regarded this situation applies to the research subject without KMS as many (20.5%, 26/127). Thus, growth disorders research subject has occurred as a baby (0-12 months). Along the research, although growth disorders can occur in all age groups [13], but tend to occur in the first 15 months of life [14], most common in children aged 3-12 months [15]. Based on nutritional status, as many (24.4%, 31/127) good nutritional research subjects, showing also the presence of markers of T and 2T. Thus, failure to thrive is not necessarily tangible undernourished or malnourished. Can also occur in children with good nutrition [16]. The term weight does not go up (T) and failure to thrive (2T) is used as one indicator of the National Nutrition Surveillance Indonesia (Ministry of Health, 2015). The term weight does not rise derived from weight loss, failure to thrive while derived from failure to thrive (FTT) (Ministry of Health, 2013). Two times in a row the weight does not rise already classified fail to grow with the symbol (2T), according to the indicators of the National Nutrition Surveillance Indonesia. In the international literature search, the term weight loss is often juxtaposed with the term failure to thrive (FTT) Iwaniec [17] does not separate strictly understanding between weight loss and failure to thrive, so that it can be confusing. Hence the term used Indonesia can help solve this problem. In the following discussion, the author refers to the term used in Indonesia. Equivalent weight does not rise (T) is the equivalent of weight loss and failure to thrive (2T) is failure to thrive [18]. Failure to thrive is a matter of public nutrition. The prevalence of stunting has about 5-10% children in developed countries, while in developing countries higher [13]. Concern, including in Indonesia. The prevalence of stunted children under five reached 37.2%. Of course in his life journey never experienced anything 2T. The results of this study, found 24.4% children with good nutrition have experienced 2-3 times the incidence during infancy 2T. If this number is summed then 2T prevalence in children under five to 61.6%. Revealing the magnitude of the problem is borne toddlers. Since 2011 Indonesia to implement the National Nutrition Surveillance as an attempt to overcome this problem. National Nutrition Surveillance Surveillance Indonesia set T and 2T incidence in infants as an indicator. Indicators that are

sensitive enough in the invention of infant growth disorders. Indonesia strategic approach can be implemented effectively and efficiently. The results of this dissertation research can be taken into consideration. 2T marker has proven to be a predictor of TB Toddlers, both on stunting and good nutrition [19]. As an indicator of nutritional surveillance National Indonesia, markers 2T dual function. First capable of early detection of growth disorders. Second, it can be used as an early marker of TB incidence. This indicator is more valid because it has construct validity (construct validity) high. Indicators of nutritional status based on the weight of the more sensitive age and actually measure the status of individual growth toddlers [16]. During the trip the natural growth retardation, body weight parameters first turn, about 3 months for following a change in body length and head circumference eventually change [20]. The sensitivity of the marker 2T can be shown clearly in status monitoring growth of children through the use KMS Toddler. Each monthly weighing Toddler, growth status can be determined, weight gain (N) or the weight does not go up (T). The first incident T already provide early warning of events stunted growth and require early intervention anyway. Preventive action is taken to more quickly and accurately before the problem is more severe. If within 4 weeks of weight has not taken up, then came the incident 2T, meaning there are disturbances of growth. Toddlers are already suspected tuberculosis, given the toddler with TB generally stunted [21]. Usually without a referral, diagnosis can be established by using a system of TB diagnosis, whether using clinical criteria or scoring system. Diagnosis confirmation followed whenever possible. In addition to early detection of disorders of growth, it is also important primary prevention (primary prevention) be educating mothers using KMS [22]. Continuous education of the mother, starts pregnant women and nursing mothers continued. Education maternal nurturing the growth of the fetus in the womb [23]. Education Early Initiation of Breastfeeding (IMD) is important, because the baby's growth is better than no IMD [24]. Education lactation for breastfeeding mothers of young infants (0-6 months) in order to improve the practice of exclusive breastfeeding [25]. Education nursing mothers on the granting of complementary feeding in infants 6-12 months in order to prevent the potential occurrence of stunting [26]. This effort can only be enforced properly if it gets the support of all stakeholders. The interest for the next generation successor primed.

5. Conclusions and Recommendations

Weight is not up (T) and failure to thrive (2T) has a high diagnostic value and has been used as a parameter in the implementation of SSIM. Markers of T and 2T can be used by doctors in the diagnosis of TB Toddlers, both clinical diagnosis based on clinical criteria or scoring systems and diagnostic confirmation. If so, a major contribution "the seven star doctors" in the discovery of TB Toddler continued to have a curative in complete. The impact, the target of elimination of TB in 2050.

References

[1] Donald, P.R., Maher, D., and Qazi, S., 2007, A research agenda to pro-mote the management of childhood tuberculosis within national tuberculosis programmes. Int J Tuberc Lung Dis. 2007. 11(4):370–80.

[2] WHO, 2015, Global Tuberculosis Control Report 2015, World Health Organization, Geneva,

Switzerland

[3] Marais B J, Gie, R.P., Schaaf, H. S., Beyers, N., Donald, P.R., Starke, J.R., Childhood pulmonary tuberculosis: old wisdom and new challenges. Am J Respir Crit Care Med 2006; 173: 1078–1090.

[4] Marais, B.J., Childhood turberculosis: reflections from the front line, Pediatr Ann. 2004 Oct;33(10):695-8.

[5] Triasih, R., Robertson, C.F., Duke, T. and Graham, S.M., A Prospective Evaluation of the Symptom-Based Screening Approach to the Management of Children who are Contacts of Tuberculosis Cases, Clinical Infectious Diseases 2015;60(1):12–8

[6] WMA, 2007, A Tuberculosis Refresher Course For Physicians, World Medical Association, with support from the Lilly MDR-TB Partnership and technical assistance from New Jersey Medical School Global Tuberculosis Institute.

[7] Yuen, C.M., Amanullah, F., Dharmadhikari, A., Nardell, E.A., Seddon, J.A., Vasilyeva,I., Zhao, Y., Keshavjee, S., Becerra, M.C., How to eli-minate tuberculosis 2: Turning off the tap: stopping tuberculosis transmission through active case-finding and prompt effective treatment. Lancet 2015; 386: 2334–43.

[8] Kemenkes, 2013, Petunjuk Teknis Manajemen TB Anak, Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan, Jakarta, h. 7-15; 19-20.

[9] WHO, 2014, Guidance for national tuberculosis programmes on the management of tuberculosis in children – 2nd ed.

[10] Lwanga, S.K., Lemeshow, S., 1991, Sample size determination in health studies, a Practical Manual. © World Health Organization, Geneve.

[11] Madiyono B., Moeslichan Mz.S., Sastroasmoro S., Budiman I. dan Purwanto S.H. (2014). Perkiraan besar sampel. Dalam: Sastroasmoro S., Ismael S. Peny. Dasar-Dasar Metodologi Penelitian Klinis. Edisi ke-5. Sagung Seto. Jakarta. h. 352-87.

[12] WHO, 2012, Global tuberculosis control: WHO report 2011.Global Tuberculosis Control Report 2012. World Health Organization, Geneva, Switzerland. World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland

[13] Onyiriuka, A.N., Evaluation and Management of the Child with Failure to Thrive, Hospital Chronicles 2011,6(1):9–23

[14] AHD, 2011. Weight and growth issues in children, Government of Western Australia, Australia Health Department.

[15] Rieger, M., and Trommlerová, S.K., Drivers of Growth Faltering in Children, ISS, Erasmus University Graduate Institute, Geneva, October 1, 2014.

[16] IDAI, 2009, Pedoman Pelayanan Medis Ikatan Dokter Anak Indonesia. Penerbit IDAI, Jakarta, h. 323-7.

[17] Iwaniec, D., 2004, Children who fail to thrive : a practice guide. Copyright John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England.

[18] Kemenkes, 2011, Panduan Diagnosis TB Anak dengan Sistem Skoring, Kementerian Kesehatan RI dan Ikatan Dokter Anak Indonesia, Jakarta.

[19] Latief, S., 2016. Suryani As'ad, S., Bahar,B., Nurdin, A.A. Implementasi Sistem Skoring Indonesia Dalam Diagnosis Tuberkulosis Balita Di Kabupaten Sidenreng Rappang, Provinsi Sulawesi Selatan.

[20] Olsen, E.M., Failure to thrive: still a problem of definition. Clin Pediatr (Phila). 2006 Jan-Feb;45(1):1-6.

[21] Nalumango, 2014, A Comparison of the WHO criteria used for notifying childhood TB. Tesis.

[22] Kemenkes, 2010, Peraturan Menteri Kesehatan Republik Indonesia Nomor 155/Menkes/ Per/I/2010 Tentang Penggunaan Kartu Menuju Sehat (KMS) Bagi Balita.

[23] Kartini, Syafar, M., Arsin, A.A., and Bahar, B. 2016. Education influence using Modified Module and m-RNA Expression of VDR Gene on Fetal Growth in Kendari City, Southeast Sulawesi. Dissertation, Postgraduate Program, Faculty of Medicine, Hasanuddin University, Makassar.

[24] Mardiana, A., Arsunan, A. A., Sirajuddin, S., Syafar, M., Difference Analysis of Weight and Occurrence of Fever, Diarrhoea, Vomiting in Infants 0-2 Months Provided Modification Module of Early Breastfeeding Initiation Compared Group Provided Standard Module in RSKDIA Fatimah and Puskesmas Bara-Baraya Makassar. Dissertation, Postgraduate Program, Faculty of Medicine, Hasanuddin University, Makassar

[25] Nurmiaty, 2016. Arsunan, A. A, Sirajuddin S., dan Syafar, M. Ekspresi mrRNA Vitamin D Receptor, Pendidikan Laktasi dan Dukungan Sosial pada Ibu Hamil dan Menyusui Terhadap Berat Badan dan Panjang Badan Bayi 0-6 Bulan. Disertasi. Program Doktor Ilmu Kedokteran, Fakultas Kedokteran Universitas Hasanuddin, Makassar.

[26] Fatmawaty, Arsin, A.A., Syafar, M., Bahar, B. 2016, Pengaruh Informasi Ibu Bayi tentang Pemberian ASI dan MP-ASI terhadap Pencegahan Stunting Potensial di Kendari Dissertation, Postgraduate Program, Faculty of Medicine, Hasanuddin University, Makassar.