

ELDERLY REVIEW EXPOSURE OF LEAD (Pb) RISK AFFECTED SECONDARY SIDEROBLASTIC FOR ANEMIA IN THE GULF OF YOUTEFA PAPUA JAYAPURA PROVINCE YEAR 2014

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ABSTRACT

Plumbum including one of heavy metals that are not essential. Heavy metals are widely used for industrial activities such as batteries, addictive material for vehicle fuel. This high consumed of lead cause the environment impact of lead (Pb) as heavy metal pollution on aquatic biota and for humans can be seen very harmful. The sample is the pollution of lead (Pb) in Gulf Youtefa in Jayapura Papua Province. Results of a study for analysis water quality parameters in the Gulf Youtefa shows the water has been contaminated with heavy metals of lead.

This research aimed to determine the relationship between age (elderly) with secondary sideroblastic anemia (anemia due to exposure to specific Plumbum) community in the Gulf Youtefa.

Type of research is observational with cross sectional approach. The population all residents who live in the Gulf Youtefa Jayapura, as much as 75 samples of people. Samples was determined by using purposive sampling.

The results showed that there is a relationship between the elderly age on the incidence of secondary sideroblastic anemia with p Value 0.039, RP = 2.32 95% CI Lower and Upper = 1,195 = 4.53.

Keywords: *Elderly, Plumbum, anemia secondary sideroblastik*

A. PRELIMINARY

Plumbum including heavy metals that are not essential. Heavy metals are widely used for industrial activities such as batteries, addictive substances as fuel for vehicles. (Priyanto, et al., 2008). Heavy metals become dangerous contaminants are heavy metals can not be destroyed (*non degradable*) by living organisms. The higher the metal content in the water will be higher the content of heavy metals in the body of the animal terakumulai. If the animal is then consumed by humans, humans are also accumulating the metal and health problems in humans (Rochyatun & Rozak, 2003). The results of the study Sarjono A, in the waters of Kamal Muara, North Jakarta (2009) also showed similar results such as the water in waters Kamal Muara been polluted by heavy metals Cadmium and Plumbum and mercury

sequentially 0.006 mg / l, 0.043 mg / l and 0, 000 152 mg / l (Sarjono, 2009).

Gulf Youtefa according to some research has been contaminated. 2004 BAPEDALDA Jayapura City found that water quality parameters in the Gulf show alarming results that contain heavy metals chromium (Cr), which has reached 0.01 mg / lt, Plumbum (lead) has reached 0.03 mg / lt and levels of mercury (Hg) of 0.02 mg / l which should not be present in water (Arobaya & Pattiselanno, 2010).

Based on the facts above shows that the current human life is threatened by environmental hazards from pollution, toxic Pb. This study tried to answer whether there is a relationship between age and exposure to plumbum with secondary sideroblastic anemia.

B. RESEARCH METHODS

1. Type Research

The study was observational with cross sectional approach.

2. Population and samples

The population in this study the whole fish and the people who live around the bay Youtefa. The sample is part of the population. The sampling technique is purposive sampling.

$$N = \frac{Z-\alpha \ 1 \ 1/2 \ ^2 [(P1 (1-P1) + P2 (1-P2))]}{d^2}$$

$$= \frac{3.84 [(0.00428) + (0.00428)]}{0009}$$

$$= 36.5$$

$$= 37$$

Thus, the samples taken were $n1 + n2 = 37 + 37 = 74$

1. Measurement of secondary sideroblastic anemia

Secondary sideroblastic anemia collected by assay protoporpirin levels in urine using the tool LCMSMS (*Liquid Chromatography Mass Spectrofotometri Detector*), anemia resulting from inhibition of heme synthesis protoporpirin globulin which causes an increase in urine using a test known Uroporpirin anemia status. Secondary sideroblastic anemia is said to be affected if protoporphyrin levels Adults: Random:more 30 g / dl (Kee, 2008).

2. Data elderly

Table 1. Distribution of respondents according Protoporphrin levels and age groups in the community in the Gulf Youtefa 2014

Age group	protoporphyrin levels				Total	
	High (Anemia SS)		Normal (Not anemia sideroblasts)		N	%
	N	%	N	%		
20-24	0	0	2	100	2	2.7
25-29	1	25	3	75	4	5.3

2a. Human samples

In determining human samples, investigators established the following criteria:

Inclusion criteria: Willing so respondents, Live in Yotefa gulf more than 2 years.

The sample size large sample following formula: Formula Lameshow 2007

By conducting interviews

C. RESEARCH RESULT

1. Anemia Sideroblastik secondary

For inspection protoporphyrin note that cases of sideroblastic anemia secondary, of 75 samples examined were found 19 samples or 25.3% were protoporphyrin high levels (≥ 30 mg / dl) or secondary sideroblastic anemia. The following table measurement results protoporphyrin levels in urine.

30-34	2	16.7	10	83.3	12	16
35-39	3	42.9	4	57.1	7	9.3
40-44	2	22.2	7	77.8	9	12
45-49	2	25	6	75	8	10.7
50-54	2	25	6	75	8	10.7
55-59	2	25	6	75	8	10.7
60-64	4	44.4.5	5	55.6	8	10.7
> 64	5	62.5	3	37.5	8	10.7
amount	23	30.7	52	69.3	75	100

2. The relationship of age with anemia secondary Sideroblastik

Based on the survey results revealed that out of 75 respondents surveyed, found eight respondents were age > 65 years (elderly) or 10.7% and an age < 65 years is 67 people or 89.3%. As for the case of

secondary sideroblastic anemia, from 75 samples examined were found 23 samples or 30.7% are exposed to levels of protoporphyrin high or secondary sideroblastic anemia. To see whether age is a risk factor for secondary sideroblastic anemia, carried out epidemiological analysis of the results found that the variables of age and secondary sideroblastic anemia have RP; 2.32 with a lower value: 1.19 and Upper: 4.53. Here are the results of the analysis in Table 2.

Table .2 risk analysis of the age and sideroblastic anemia secondary to the communities in the Gulf Youtefa Jayapura, Papua in 2014

	Secondary sideroblastic anemia				Total	(Pvalue)	RP; 2,32	
	Yes		No				L	U
	N	%	N	%				
Age > 65 years	5	62.5	3	37.5	8	0,039	1,195	4.53
Age <65 year	18	26.9	49	73.1	67			
Total	23	30.7	52	69.3	75			

D. DISCUSSION

According Bogoriani (2006), Plumbum heavy metal accumulation in the living body because of the heavy metals are absorbed (sign) is greater than that excreted from the body of the fish samples. This plumbum intake with meals of fish samples, the absorption of contaminated water or from water that is ingested through the digestive system. According plumbum this may cause subsequent multiplier effect

on consumers in accordance with the system of the food chain and will arrive in humans if consumed by humans (Bogoriani, 2006).

The content of plumbum in the blood represents the balance between the number of plumbum taken into the body with plumbum which is excreted from the body, which can also describe the existence of plumbum in soft tissue and hard tissue. Given also that the content of plumbum contained in the blood and soft tissue component is 1% of the total

plumbum that enter the body, and about 90-99% plumbum in the blood is present in erythrocytes. Plumbum affect coproporphyrinogen function oxidase enzyme in the synthesis of hemoglobin (Palar, 1994). Protoporphyrin is an organic compound for the formation of heme that binds to Fe and has the ability to bind O₂ (Burden, *et al.*, 1998). Plumbum will increase levels levulinat Amino Acid (ALA) required in the synthesis of heme to form hemoglobin as a precursor porphobilinogen (Bhavagan, 1992).

According to the theory, a group at risk for anemia is a group of elderly and children, but because in this study respondents aged more than 20 years, so their analysis to classify into two groups at risk are elderly and not the elderly.

The results showed that there was a relationship between the age of the elderly with age does not belong to the elderly secondary sideroblastic anemia with p value of 0.039 Value. Because the p value <0.05 alpha value, so that the null hypothesis is rejected and H_a received or no relationship between the age of the elderly with anemia.

Furthermore, to determine whether the age of the elderly is a risk factor for secondary sideroblastic anemia, then the two variables were analyzed by calculating the prevalence ratio. The analysis showed that RP = 2.32 95% CI = 1.195 Lower and Upper = 4.53 then interpreted that people aged more 65 years (elderly) had 2.32 times the risk of developing secondary sideroblastic anemia than non-elderly.

The results of this research together with research conducted Marice Sihombing workers at Pulo Gadung Industrial Estate Jakarta in 2009 which found no significant correlation between age and incidence of anemia with a P value: 0.006 and RP: 1.7 CI 95% (1.1 to 2, 4) (SIH & Riyadina, 2009)

According to Esther, the effects of exposure to heavy metals (plumbum) on human health vary significantly depending on the amount and duration of exposure, as well as on the health status of people who are exposed. Some people have a huge risk to damage from exposure to heavy metals, for example children and the elderly, those who suffer from respiratory diseases and heart disease, lung and they are active is a high-risk group (Ester, 2012).

Elderly and children are particularly at risk with anemia associated with endurance of both age groups, the reason being the age of the children and the elderly are generally lower body immunity so that the absorption of the nutrients iron or greatly decreased. This will aggravate the condition if they live in a place that has been polluted by plumbum environment (Lopez, *et al.*, 2013).

D. Suggestions

1. People do not throw litter into the sea to reduce the environmental impact Plumbum in marine waters.
2. In order for the routine health examination in health care so that the disease due to exposure to plumbum more quickly detected and addressed more quickly.
3. The Health Department should conduct regular monitoring and surveillance of plumbum pollution and public health status examination and treatment of the disease suffered by the community as a result of exposure to plumbum.
4. Keep an ongoing study one environmental quality in the Gulf Youtefa.

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