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RESULTS OF INTRAVENOUS ALINAMIN AND ALCOHOL EXAMINATION RESULTS IN PATIENTS COMPLAINTS OF SNACTING DISORDERS AT RSMH PALEMBANG

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Abstract.

Smell is a chemical substance mixed in the air that humans perceive with their sense of smell. Loss of smell or loss of smell has become very important in recent years. Currently, research on odor is very interesting because it can determine the type of odor, as well as the function of smell. Examination of the intravenous smell test and alcohol smell test is one of the gold standard examinations that can be done to determine the type of smell disorder. To determine the concordance between the results of the intravenous alinamin smell test and the alcohol smell test in patients with olfactory disorders at RSMH Palembang. Observational and analytic research using cross sectional. Data collection was carried out using the medical records of RSUP Dr. Mohammad Hoesin Palembang for the period October 2022 to January 2023. Data were analyzed with IBM SPSS 25. In this study, there were 49 patients with complaints of smell disturbances to the THTBKL department of RSUP Dr. Mohammad Hoesin Palembang. The mean age in the study was 33 years old with the most vulnerable population aged <20 years (26.5%). With the majority of the female sex (57.1%). While the majority of the work is mostly students (26.5%) and complains of gradual disturbance smells (91.8%). Most of the patients who came with complaints of smell disturbances were patients with sinonasal masses (53.1%). The correlation between intravenous alinamin and alcohol smell tests using the Spearman correlation test showed a very strong correlation (r=0.908) and in the conformity test using Cohen's kappa value obtained was 1.000 which means that perfect agreement was reached between the two tests. There is a concordance in the examination results between the alinamin smell test and the alcohol smell test in patients with complaints of smell disorders.

Key words : *Smell test, Intravenous alinamin smell test, Alcohol smell test.*

1. Introduction

Smell is a chemical substance mixed in the air that humans receive with their sense of smell. Smells make an important contribution to quality of life and appreciation of the environment. These senses not only guard against toxic and noxious stimuli, but the ability to smell and taste contributes to a better quality of life. In general,
the nasal passages contain structures, the olfactory receptors located on the superior septum. Odors present in the environment can be detected by the olfactory nerves which lie in the olfactory epithelium lining the superior nasal cavity. These nerves will deliver signals to the olfactory bulb which is then delivered to the olfactory cortex. In this process, it involves areas of the cortex that play a role in odor discrimination and limbic areas that play a role in the physiology and emotions of smell. [1–3]

Loss of smell or loss of smell has become very important in recent years. Olfactory disorders are broadly divided into two, namely quantitative smell disorders and qualitative smell disorders. Quantitative smell disturbances are usually caused by peripheral damage to the olfactory nerves, which include the olfactory fila or by central damage to the second neuron of the olfactory bulb and/or its tracts. Quantitative olfactory disorders include anosmia (loss of the ability to detect and identify an odor) and hyposmia (partial loss of the ability to detect and identify an odor). Qualitative olfactory disturbances are usually caused by central dysfunction, usually caused by temporal lobe epilepsy. Qualitative smell disturbances include dysosmia (distortion of smell sensation), pantosmia (olfactory hallucinations), heterosmia (incorrect distinction between odorants), cacosmia (incorrect detection of an unpleasant sensation) and parosmia (opposite smell sensation). Mechanically, olfactory disturbances are divided into three, namely conductive disturbances, sensorineural disturbances and mixed disturbances. [2,4,5]

Loss of smell or decreased olfactory function increases significantly with age. Reported at the age of 60 years or more can increase by up to 50%. In an Asian study in which more than 1000 patients self-assessed their olfactory function and then had odor identification, 9 -14% had olfactory disturbances in patients across all age groups, olfactory dysfunction was measurable at 18 to 35 years of age 3.7 %, 17.4% of patients aged 36 to 55 years, and 35.6% of patients 55 years. The incidence of olfactory disorders in the United States is estimated at 1.4% of the population. In Austria, Switzerland and Germany, around 80,000 people go to outpatient clinics per year with complaints of smell problems. At Dr. Hospital Cipto Mangunkusumo, Indonesia, a study conducted by Nurul Endah et al., found that 45% of patients with allergic rhinitis suffered from olfactory disorders. [2,4,6,7]

Currently, research on odor is very interesting because it can determine the type of odor, as well as the function of smell. In 1970, the National Institutes of Health, Bethesda, MD created the first clinical program in the United States devoted to evaluating and treating patients with taste and smell dysfunction. In 1971, in Japan, the olfactory benchmark test, using the T&T olfactometer, as well as the intravenous smell test using Alinamin (Takeda Chemical Industries, Ltd., Osaka, Japan) were widely used as standard diagnostic methods. Alinamin is a thiol-type vitamin B1 derivative. The smell test using alinamin is fast, easy and the ingredients are easy to get. The smell test is given by intravenous injection, and smells of mercaptan (garlic). In 2003, the Japan Rhinology Society proposed an examination using a questionnaire. The Self-Administrated Odor Questionnaire (SAOQ) was proposed as a convenient method for obtaining individual data. Odor-related items were selected with reference to odor in multiple olfactory tests and odor analyses. the questionnaire includes 20 items related to smell. To provide context for the score, the normal reference level of the questionnaire was calculated mathematically to distinguish normal smellers from those with impaired smell. [4–8]

Examination of olfactory disorders can be done by history, physical examination and support. In the anamnesis, the causes of smell disorders were asked, including history of head trauma, sinonasal disease, and upper respiratory tract infections, history of systemic diseases, history of neurodegenerative diseases, smoking habits, and all factors that can cause smell disorders. The physical examination includes examination of the nose with anterior, posterior and nasoendoscopy rhinoscopy to assess the presence or absence of obstruction in the nose, such as inflammation, polyps, turbinate hypertrophy, septal deviation, mucosal thickening, and tumor masses that will affect the odorant transport process to the olfactory area. [1,2,9]

Examination of olfactory function can be carried out psychophysically and electrophysiologically. Electrophysiological examination is usually used for research and material tools are difficult to obtain. Psychophysical examination to check the function of the complainant is usually used for clinical purposes. There are 27 psychophysical examinations to determine smell disorders. The psychophysical examinations that are frequently performed around the world are the intravenous smell test, the alcohol smell test, the Odor Stix Test, The University of Pennsylvania Smell Identification Test (UPSIT), Sniffin Sticks, and the Connecticut Chemosensory Clinical Research Center (CCCRS Test). [1,2,4,9]

Examination of the intravenous smell test and alcohol smell test is one of the gold standard examinations that can be done to determine the type of smell disorder. It is hoped that this study can provide information regarding the suitability between the results of the intravenous alinamnine smell test and the alcohol smell test in patients with complaints of smell disorders at Dr. Mohammad Hoesin Palembang. Knowing this relationship is expected to be able to describe and predict the type of olfactory disturbance that will be found so that it can be used as a consideration for appropriate management and for better patient education about the prognosis of olfactory improvement.

Based on the problems above, the research problem can be formulated "Is there a conformity between the results of the intravenous alinamin and alcohol smell test in patients with complaints of smell problems at RSMH Palembang?"

Based on the formulation of the problem above, the hypothesis of this study is "there is a correlation between the results of the intravenous alinamin smell test and the alcohol smell test in patients with complaints of smell disorders at RSMH Palembang".

This study aims to determine the compatibility between the results of the intravenous alinamin smell test and the alcohol smell test in patients with smell disorders at RSMH Palembang, to find out the characteristics of patients with smell disorders at RSUP Dr. Mohammad Hoesin Palembang, knowing the description of the types of smell disorders both quantitatively and mechanically at Dr. Mohammad Hoesin Palembang, assessed the severity of olfactory disorders in patients with olfactory disorders by intravenous alinamin smell test and alcohol smell test at RSUP Dr. Dr. Mohammad Hoesin Palembang and analyzing the results of the intravenous alinamin smell test and the alcohol smell test in patients with smell disorders at RSUP Dr. Mohammad Hoesin Palembang.

The results of this study are expected to be able to add to knowledge, especially in the field of rhinology regarding examination of intravenous smell tests and alcohol smell tests in patients with smell disorders. In addition, this research is expected to become basic data for further research.

2. Methods

This is study observational use _ design cut latitude (*cross sectional*) and aim For look for suitability between results olfactory test _ alinamin Intravenous and olfactory tests alcohol in patients disturbance inhaler at RSUP Dr. Mohammad Hoesin Palembang.

This research was conducted at the Recording Installation Hospital Dr. Mohammad Hoesin Palembang during the period October 2022 to January 2023.

Population study is all record data medical patient in the ENTKL Rinology Division of RSUP Dr. Mohammad Hoesin

Palembang with complaint nose during period time October 2022 to with january 2023. Sample study is record data medical patient at the Rinology Division of RSUP Dr. Mohammad Hoesin Palembang with complaint disturbance smelling done _ olfactory test _ alinamin Intravenous and olfactory tests alcohol at RSUP Dr. Mohammad Hoesin Palembang as well fulfil criteria study until period time October 2022 to with january 2023.

Whole patient with complaint disturbance inhaler at the ENTKL Rinology polyclinic at RSUP Dr. Mohammad Hoesin Palembang recorded in the data record medical complete period _ October 2022 to with january 2023. Amount sample For olfactory correlation test intravenously with the olfactory test alcohol in 31 patients disturbance olfactory people.

Variable Study results inspection test smell alinamin intravenously and results of the alcohol sniffing test. Variables related to olfactory disturbances (Age, sex, occupation, onset, sinonasal mass, rhinitis, viral infection, nasal anatomical abnormalities, drugs, chemicals, head trauma, comorbid history) .

Sample taken with method *total sampling* on record data medical patient disturbance smelling done _ olfactory test _ alinamin Intravenous and olfactory tests alcohol . Researcher choose as much Possible suitable sample _ with criteria inclusion and exclusion with amount minimum sample required collected is 31 record data medical patient .

Data obtained from the medical records of RSUP Dr. Mohammad Hoesin Palembang for the period October 2022 to January 2023. Data was collected and sorted to obtain research samples that met the inclusion and exclusion criteria.

Analysis univariate done to characteristic data base subject research . Analysis univariate This aim describe sample research . Analysis descriptive in the form of numeric data and categorical data . Numerical data will served in form mark mean and deviation standard , while categorical data will served in form chart or distribution table frequency , proportion or presentation , and narration .

For test strength olfactory correlation test alinamin Intravenous and olfactory tests alcohol in patients disturbance smelt , Pearson's correlation test was performed if the data were normally distributed . If the data is not normally distributed or in the form of categorical data , plans Spearman's correlation test was used . The p-value is considered meaning if $p < 0.05$ with a 95% confidence interval . For see connection between variable characteristic confounders _ categorical with degrees disturbance smell plan Chi-Square is used . Data from results analysis statistics displayed in tables , graphics and textual . Processing and results of data will be helped with device SPSS software for windows version 21.0.

3. Results and Discussion

A total of 49 patients with complaint disturbance medicated inhaler _ to THTKL RSUP Dr. Mohammad Hoesin Palembang was included in study this . Study This is study observational with design *cross*-sectional aims For analyze suitability between results olfactory test _ alinamin Intravenous and olfactory tests alcohol in patients disturbance inhaler at RSUP Dr. Mohammad Hoesin Palembang. Patient data obtained from record medical RSUP Dr. Mohammad Hoesin Palembang period October 2022 to with January 2023.

IBM SPSS application version 25 is used For do data analysis on research this . Analysis done _ including analysis univariate and bivariate . Analysis univariate addressed For describe characteristics patients in the study this consists _ on variable bound (duration of smell test alinamin Intravenous and olfactory tests alcohol) as well variable free (age , sex gender , occupation , onset of disorder smelling , complaining nose , sinonasal mass , rhinitis, viral infections , head trauma , disorders anatomy , disease comorbidities , exposure substance chemicals , and drugs). Analysis bivariate in the form of a

correlation test done For test strength olfactory correlation test alinamin Intravenous and olfactory tests alcohol in patients disturbance inhaler , meanwhile analysis bivariate in the form of a suitability test done For see connection between variable characteristic confounder _ categorical with degrees disturbance smell . Data from results statistical analysis is shown in table and textual .

Analysis results univariate give description distribution frequency on research . Patients on the study This own average 33 years old with population the most is in the range age <20 years . Participant study part big is woman . Partly pass big profession as student . Most _ patient experience characteristic complaints _ gradually , complaints nose blocked , has a sinonasal mass , as well No own history of rhinitis, viral infection , head trauma , disorder anatomy , disease comorbidities , exposure substance chemistry , to consumption drugs . Through the smell test intravenously and alcohol obtained each 14 normal. Data distribution can seen more further in Table 1.

Table 1. Characteristics sample Study

Variabel	N	%	$\bar{X} \pm$ SD
Usia			33,1±2,198
<20 tahun	13	26.5	
21-30 tahun	10	20.4	
31-40 tahun	11	22.4	
41-50 tahun	7	14.3	
>51 tahun	8	16.3	
Jenis kelamin			
Pria	21	42.9	
Wanita	28	57.1	
Pekerjaan			
Pelajar	13	26.5	
Ibu rumah tangga	8	16.3	
Swasta	12	24.5	
PNS	6	12.2	
Buruh	3	6.1	
Petani	7	14.3	
Onset			
Mendadak	4	8.2	
Berangsur-angsur	45	91.8	
Keluhan hidung			
Infeksi virus			
Ya	3	6.1	
Tidak	46	93.9	
Trauma kepala			
Ya	2	4.1	
Tidak	47	95.9	
Kelainan anatomis			
Ya	7	14.3	
Tidak	42	85.7	
Penyakit komorbid			
Ya	4	8.2	
Tidak	45	91.8	
Paparan zat kimia			
Ya	14	28.6	
Tidak	35	71.4	
Obat-obatan			
Ya	8	16.3	
Tidak	41	83.7	
Uji penghidu intravena			
Normal	14	28.6	
Konduktif	22	44.9	
Sensorineural	13	26.5	
Uji penghidu alcohol			
Normal	14	28.6	
Hiposmia	22	44.9	
Anosmia	13	26.5	

Relationship of Confounding Variables with Results of Intravenous Smell Test and Alcohol Smell Test. There is eight variable identified confounders _ in study these , namely sinonasal mass , rhinitis, viral infections , head trauma , disorders anatomy , exposure substance chemicals , and drugs . Through analysis , found that variable confounder form disease comorbidities and exposure substance chemistry own connection with olfactory test results intravenously nor alcohol with p=0.027 and p=0.006 respectively. Temporary it , other variables do not show connection with the test results (p> 0.05). Analysis results (Table 2 and 3)

Table 2. Connection variable study with olfactory test results intravenously

Variabel	Hasil uji penghidu Alkohol			*P value*
	Normal	Hiposmia	Anosmia	
Massa sinonasal				
Ya	7 (50%)	12 (54,5%)	7 (53,8%)	1,000
Tidak	7 (50%)	10 (45,5%)	6 (46,2%)	
Rhinitis				
Ya	4 (28,6%)	5 (22,7%)	0 (0%)	0,100
Tidak	10 (71,4%)	17 (77,3%)	13 (100%)	
Infeksi virus				
Ya	0 (0%)	1 (4,5%)	2 (15,4%)	0,335
Tidak	14 (100%)	21 (95,5%)	11 (84,6%)	
Trauma kepala				
Ya	0 (0%)	0 (0%)	2 (15,4%)	0,066
Tidak	14 (100%)	22 (100%)	11 (84,6%)	
Kelainan anatomis				
Ya	3 (21,4%)	4 (18,2%)	0 (0%)	0,285
Tidak	11 (78,6%)	18 (81,8%)	13 (100%)	
Penyakit komorbid				
Ya	1 (7,1%)	0 (0%)	3 (23,1%)	0,027
Tidak	13 (92,9%)	22 (100%)	10 (76,9%)	
Paparan zat kimia				
Ya	1 (7,1%)	5 (22,7%)	8 (61,5%)	0,006
Tidak	13 (92,9%)	17 (77,3%)	5 (38,5%)	
Obat-obatan				
Ya	1 (7,1%)	4 (18,2%)	3 (23,1%)	0,553
Tidak	13 (92,9%)	18 (81,8%)	10 (76,9%)	

Table 3 Connection variable study with olfactory test results alcohol

Variabel	Hasil uji penghidu intravena			*P value*
	Normal	Konduktif	Sensorineural	
Massa sinonasal				
Ya	7 (50%)	12 (54,5%)	7 (53,8%)	1,000
Tidak	7 (50%)	10 (45,5%)	6 (46,2%)	
Rhinitis				
Ya	4 (28,6%)	5 (22,7%)	0 (0%)	0,100
Tidak	10 (71,4%)	17 (77,3%)	13 (100%)	
Infeksi virus				
Ya	0 (0%)	1 (4,5%)	2 (15,4%)	0,335
Tidak	14 (100%)	21 (95,5%)	11 (84,6%)	
Trauma kepala				
Ya	0 (0%)	0 (0%)	2 (15,4%)	0,066
Tidak	14 (100%)	22 (100%)	11 (84,6%)	
Kelainan anatomis				
Ya	3 (21,4%)	4 (18,2%)	0 (0%)	0,285
Tidak	11 (78,6%)	18 (81,8%)	13 (100%)	
Penyakit komorbid				
Ya	1 (7,1%)	0 (0%)	3 (23,1%)	0,027
Tidak	13 (92,9%)	22 (100%)	10 (76,9%)	
Paparan zat kimia				
Ya	1 (7,1%)	5 (22,7%)	8 (61,5%)	0,006
Tidak	13 (92,9%)	17 (77,3%)	5 (38,5%)	
Obat-obatan				
Ya	1 (7,1%)	4 (18,2%)	3 (23,1%)	0,553
Tidak	13 (92,9%)	18 (81,8%)	10 (76,9%)	

Results analysis bivariate For correlation between duration test smell

alinamin intravenous and duration test smell alcohol use test Spearman's correlation shows results significant ($p<0.05$) with degrees correlation very strong ($r=0.908$). Results test correlation (table 4)

Table 4. Correlation test smell alinamin intravenous and test smell alcohol

Variabel	Koefisien korelasi	*p value*
Uji penghidu alinamin intravena	0,908	<0,001
Uji penghidu alkohol		

Compatibility of Intravenous Alinamin and Alcohol Smell Test in Patients with Olfaction Impaired suitability test smell alinamin intravenously and alcohol in patients with disturbance smell (Table 5). Category abnormality conductive and sensorineural on test smell intravenously grouped as " Not normal", as well as on findings resultant hyposmia and anosmia _ _ _ test smell alcohol . Based on analysis this , whole sample study own same result _ on test smell alinamin intravenous and test smell alcohol ($p<0.001$). With thus , *Cohen's kappa value* is obtained is 1,000 which means achievement *perfect agreement* between the two tests .

Table 5. suitability test smell alinamin intravenously and alcohol in patients with disturbance smell

		Durasi uji penghidu alkohol		Total	Kappa value	p value
		Normal	Tidak normal			
Durasi uji penghidu alinamin intravena	Normal	14	0	14	1.000	<0,001
	Tidak normal	0	35	35		
Total		14	35	49		

4. Conclusion

A total of 49 patients with complaint disturbance medicated inhaler _ to THTKL RSUP Dr. Mohammad Hoesin Palembang was included in study this . Average experiencing age _ complaint disturbance smell is 33 years with population the most is in the range age <20 years (26.5%). Participant study part big is women (57.1%). Partly pass big profession as students (26.5%). Most _ patient experience characteristic complaints _ instillation (91.8), complaints nose occluded (77.6%), and sinonasal mass (53.1%).

Based on test smell alinamin intravenously , especially patients belong own disturbance olfactory conductive type (22 patients; 44.9%). Temporary it , based on test smell alcohol , study patients generally own level belonging to the disorder hyposmia (22 patients; 44.9%)

Based on test smell alinamin intravenously , patients with disturbance smell sensory (13 patients; 26.5%) and test smell alcohol (13 patients: 26.5%) experienced level severity in disturbance smell with the average can feel the smell with duration of 4.61 seconds on inspection test smell alinamin intravenously and a distance of 1.46cm.

Correlation Test based on me test smell Alinamin intravenous and test smell alcohol show exists level significant correlation ($p<0.05$) with degrees correlation very strong ($r=0.908$) and test smell alinamin intravenously and alcohol own level suitability on *perfect agreement* ($\kappa=1.000$; $p<0.001$) in the patients tested in study this .

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