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Mass Blood Survey Followed by Active Case Detection Success to Eradicate Malaria in Batunampar Village, Jerowaru Subdistrict, East Lombok, West Nusa Tenggara, Indonesia

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ABSTRACT

Malaria is an endemic that often occurs in the coastal areas of East Lombok, West Nusa Tenggara. One of the most common ways of spreading this parasite is through asymptomatic malaria. Therefore, mass blood surveys and active case detection are needed to identify parasitemia and eradicate malaria in Batunampar village, Jerowaru subdistrict, East Lombok, West Nusa Tenggara, Indonesia. Mass blood survey was conducted on all residents of the research location through Rapid Diagnostic Tests, microscopic examination, and therapy. Furthermore, active case detection and evaluation were carried out for 5 consecutive years in collaboration with the Public Health Center in East Lombok. In the mass blood survey, 3,038 people (61%) were examined from a total of 5,017 residents. The Rapid Diagnostic Test (RDT) result showed that 15 people were positive for malaria, out of which 4 (27%) showed fever symptoms. Similarly, in the first year of active case detection, 296 residents suffered fever, with an Annual Parasite Incidence (API) decline below 1 per 10,000 population. The incidence of asymptomatic malaria in Batunampar village is 73%, which is relatively high. However, due to the successful detection of the associated parasite that causes this infection, it is easier to detect and treat sufferers, thereby reducing the rate of transmission. Detection of asymptomatic and symptomatic malaria and appropriate treatment are the keys to successfully eradicating malaria in Batunampar village, East Lombok.

Keywords: Active case detection, Annual Parasite Incidence, Malaria, Mass blood survey.

1. INTRODUCTION

Malaria, tuberculosis (TB), and HIV/AIDS are major public health problems in poor and underdeveloped countries. These infections lead to spontaneous abortion, low birth weight babies, death of newborns, and direct/indirect cause of maternal death in pregnant women. According to research, approximately 90% of malaria-related deaths in South Africa and the Sahara occur mostly in children every 30 seconds [1]. Survivors are likely to suffer irreparable brain damage. The World Health Organization stated that malaria is found in tropical and subtropical regions with a yearly

death rate of 1 million people and more than 300 million sufferers [1].

The 2001 Household Health Survey (SKRT) in Indonesia estimated that approximately 70 million people live in malaria-endemic areas with 15 million clinical cases. From this total number, 56.3 million live in moderate to high-risk areas. In 2003, malaria spread to 6,053 villages in 226 regencies and 30 provinces, a significant increase from the 1997 survey. This indicates that Indonesia is a tropical country with a suitable environment for mosquitoes to lay eggs and breed, therefore, it acts as a reservoir of plasmodium [2,3].

Malaria is one of the main public health problems in West Nusa Tenggara, with some endemic areas. Based on a report from the Provincial Health Office, this area experienced an annual malaria increase of 20.5 per 1000 population in 2005. This means that the incidence of malaria has been continuously decreased since 1998. However, in some areas, there are frequent outbreaks, thereby leading to continuous transmission [2,3]. For example, in East Lombok from October to December 2005, a total death rate of 14 people was recorded with 1,443 clinical cases at a positive rate of 39.9% [4].

Several malaria controls programs, such as house spraying, biological vector control, larvicides, environmental management, and installation of mosquito nets, have been implemented in West Nusa Tenggara for decades. Meanwhile, the strategies used in malaria detection differ with regions. For instance, in Java and Bali, it is carried out by active and passive case detection (ACD, PCD), mass fever survey (MFS), epidemiological investigation (Epid), survey, and follow-up of population migration, while in West Nusa Tenggara only PCD and malariometric survey are utilized [2,4].

The malaria control program in West Nusa Tenggara is also associated with different problems compared to other areas. This is because its surrounding environment is generally an ideal place for mosquitoes to lay eggs and breed. Therefore, the residents of this area have a greater chance of spreading the virus because the percentage of working as laborers in other parts of Indonesia or abroad is more significant. This program, with its many problems, requires the cooperation of various stakeholders with an integrated approach to control vectors, humans, and their environment through early diagnosis and appropriate treatment [4].

The Faculty of Medicine, the University of Mataram in collaboration with the University of Bukkyo, Kyoto, Japan, the Hepatitis Laboratory of West Nusa Tenggara, and the Health Office of East Lombok Regency held a malaria control program centered on Keruak and Jerowaru sub-districts from December 2006 to February 2008. These areas were chosen because of the high malaria incidence and unique socio-economic background, closeness to the beach, significant population mobility, and strong religious figures. One of the programs carried out in this collaboration is a mass blood survey [5].

Annual Malaria Incidence (AMI) in Batunampar Village and Jerowaru Sub-District are high at 40.6 and 17.78 per 1000 population. These areas geographically consist of beaches and dams that act as breeding places for mosquitoes. The major outbreak of malaria occurred in 1997, resulting in the deaths of more than 10 people [4,5].

Therefore, a mass blood survey is needed to determine the incidence of malaria and its actual rate in all residents of Batunampar Village. This is because determining the incidence of malaria helps in breaking the chain of transmission. In line with this, the main goal is to reduce malaria incidence, specifically in Batunampar Village and East Lombok in general.

2. RESEARCH METHOD

2.1 Place and time of implementation

This Mass Blood Survey took place in Batunampar Village, Jerowaru Sub-District, East Lombok, from Thursday 1 to February 28, 2007. Also, the examinations were carried out daily from 08:30 am to 05:00 pm, including during holidays and Sundays.

Batunampar is one of the villages in Jerowaru Sub-District, East Lombok Regency, West Nusa Tenggara Province, consisting of equal land and water areas. It has a mass of approximately 924 km² with 5,017 residents. Furthermore, this area consists of 5 hamlets, with an average population of 1,000 people per hamlet. The common occupation of the residents is fishing and farming. The village consists of numerous reservoirs, such as small artificial lakes used to hold water, specifically during the rainy season. [4,5].

2.2 Mass Blood Survey

The socialization process was carried out at the Batunampar village office on January 28, 2007, in preparation for the smooth running of the mass blood survey. This activity, which was accompanied by counseling about malaria, was attended by all village officials, religious and community leaders, NGOs, and representatives. This was also used to explain the procedure for the mass blood survey and the daily schedule of activities. Furthermore, the collection of mass is submitted to each Head of the Hamlet.

After signing the informed consent, capillary blood was taken from all residents' fingertips/earlobe/heel irrespective of their symptoms of malaria. Some of the blood collected with a microcapillary tube had thick/thin smears, while others were examined for malaria parasites using RDT.

Malaria parasite examination was carried out using RDT (West Nusa Tenggara Hepatitis Laboratory) and confirmed by microscopic analysis. Blood smears were collected start from the morning till the afternoon at the Village Malaria Post (Public Health Center Assistant) and then taken to the Hepatitis Laboratory of West Nusa Tenggara to be examined. Microscopic examination was carried out by 2 malaria technicians with more than 15 years of experience. However, a third reader is employed when there are discrepancies in the results.

2.3 Active Case Detection

Active case detection is a continuation technique carried out from March 1, 2007, to February 29, 2008, after completing the mass blood survey. This technique used blood tests to detect malaria, specifically in residents who showed symptoms, such as fever and chills. In Batunampar Village, 2 alert officers were provided with malaria drugs to assist sick residents. Those with fever and chills are asked to experience a blood test with a RDT. The malaria-positive population will be treated according to the Ministry of Health guidelines. Approximately 2 ccs of venous blood are taken from patients with positive results for confirmation examination at the Hepatitis Laboratory of West Nusa Tenggara with a microscope. One special officer is tasked with bringing blood samples from Batunampar Village to the Hepatitis Laboratory, Mataram.

The Active Case Detection (ACD) program, which is a collaboration between the Medical Faculty of Mataram University and the East Lombok Health Office, was carried out till 2012. This program involved 3 health centers located around Batunampar village, namely Sukaraja, Keruak, and Jerowaru. After the collaboration program ended, the local Health Center continued the active case detection program under the supervision of the East Lombok Health Office. API was also used as a parameter to assess the incidence of malaria.

3. RESULTS

3.1 Mass Blood Survey and Active Case Detection

The mass blood survey was carried out in Batunampar Village from 1st to February 28, 2007. It was carried out by visiting the 5 hamlets in this region, namely Batunampar, Pene, Sagimateng, Mensah, and Tembere. Some helmets were examined more than once, depending on their size.

In this mass blood survey, 3,038 people (61%) of the 5,017 residents registered at the Village office were successfully examined using RDT. The result found that 15 people had malaria, 10 and 4 had falciparum and vivax malaria, and 1 person was positive for falciparum and vivax malaria. The youngest patient was 2 years old and suffered from Plasmodium vivax, while the oldest was 49 years old with plasmodium falciparum. In this situation, API in February 2007 in Batunampar Village was 3.0 per 1000 population.

Table 1. The number of malaria sufferers by type of plasmodium and their symptoms.

No	Types of Plasmodia	Fever Symptoms (%)	Without Fever Symptoms (%)	Total
1	Plasmodium falciparum	4 (40)	6 (60)	10 (100)
2	Plasmodium vivax	0	4	4
3	Mixture of Plasmodium falciparum and Plasmodium vivax	0	1	1
	Total	4 (27 %)	11 (73%)	15 (100%)

Of the 15 people who were positive for malaria, only 4 (27%) showed symptoms of fever. This suggests that healthy people are also prone to contracting malaria and passing it to others. Individuals found to be positive for malaria parasites are immediately treated using treatment procedures issued by the Indonesian Ministry of Health. These include a combination of artesunate, amodiaquine, and primaquine for patients with Malaria falciparum and a combination of chloroquine and primaquine for malaria vivax. The youngest patient by Plasmodium vivax was 2 years old and did not show symptoms.

The program, which was implemented from March 1, 2007, to February 29, 2008, was successfully examined by 296 residents who showed symptoms of malaria, namely fever, and chills. Of all residents who showed symptoms, none was positive for malaria after a blood test using an RDT. However, at the Sukaraja Health Center, there was only 1 positive malaria patient by microscopic examination from Batunampar Village.

3.2 Advanced evaluation of Active Case Detection

Periodic evaluation is carried out to determine the results of the active case detection (ACD) program implementation. Annual Parasite Incidence (API) has continued to decline below 1 per 10,000 population since the program was implemented from 2007 to 2012.

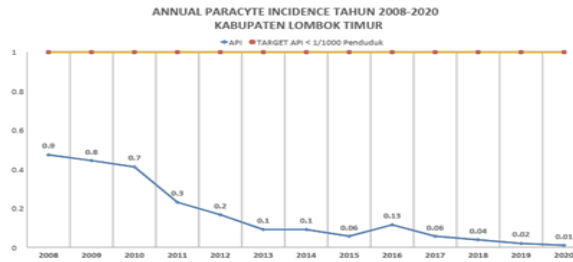


Figure 1. Annual Parasite Incidence in Batunampar Village, East Lombok from 2008 to 2020 [6].

4. DISCUSSION

In the mass blood survey, 3,038 people (61%) of the 5,017 residents were registered at the local village office. The previous survey carried out in 2002 in Purworejo, and Kulon Progo succeeded in examining 78% and 65% of the populations [7]. Mass blood survey in Brazil also succeeded in examining 73,4% or 7 million of the populations [8]. These inconsistencies in pollution rate during the inspection because many residents were not on-site. Therefore, the inspector had to move from one helmet to another until the process was completed. Also, the geographical condition of the population consisted 5 hamlets scattered between rice fields, hills, and valleys. Consequently, officers could not reach some areas due to their significant distance from the terrain and difficulty to access [4,5].

The RDT examination results found 15 malaria-positive people from 5,017 residents. Therefore, assuming that malaria does not occur in the following month, then in a year, the minimum API in Batunampar Village in 2007 is 3.0 per 1000 population. According to the MOH classification, this includes the criteria for moderate malaria incidence [7].

According to a 2006 report by the Sukaraja Health Center, AMI in Batunampar Village was 40.6 per 1000 population, which was classified in the high category. Based on API 3 per 1000 population, the Malaria Incidence in 2007 was lower than in 2006. This decrease is due to several factors, such as a decrease in its occurrence in 2007. Also, the AMI used to report the incidence of malaria by the number of patients that show clinical symptoms. This is in accordance with the Ministry of Health's regulation report, which stated that Public Health Centers outside Java and Bali report malaria incidence based on AMI [2,4]. Furthermore, the symptoms of malaria, such as fever and chills, are very subjective because it is similar to other infectious diseases. Patients with malaria and those living in malaria-endemic areas are more likely to be infected, increasing the recorded AMI. Meanwhile, in Java and Bali, API reported the number of positive malaria patients through microscopic examination. However, the number of sufferers found in this mass blood survey was not high due to the time used to implement the activity.

This mass blood survey is carried out when the rainy season has not yet arrived, whereas malaria incidence is usually high at the beginning of the rainy season [5,7,9,].

Of the 15 people with malaria, only 4 (27%) showed symptoms of fever, which means that the incidence of asymptomatic malaria in Batunampar Village is quite high. The main symptom of malaria as an infectious disease caused by plasmodium is fever. It is suspected that its occurrence is related to the process of schizogony (rupture of merozoites/schizonts) with the clinical symptoms influenced by the type/strain of plasmodium that infects the body's immunity, and the number of infecting parasites. Immunity to malaria is elicited by stimulation from repeated infection of Plasmodium [10,11].

Research carried out in Ghana in 2000 involving 308 samples found 96.8%, asymptomatic malaria patients [12]. Another research in Brazil in 1999 on 1173 samples also found 82% asymptomatic malaria [13]. Yekutieli (1960) summarized 5 major research of asymptomatic malaria at the end of the 1960s. The prevalence ranges from 18.4% in Japan to 90.7% in Taiwan [8]. Patients with asymptomatic malaria are more infectious due to the presence of gametocytes in the blood that can last up to 9 months. This is also because sufferers do not realize they are sick, therefore, they do not take antimalarial drugs [10,14].

In Brazil and China, mass blood surveys were conducted continuously as a malaria control program, also known as aggressive active case detection (AACD). This program succeeded in reducing the incidence of malaria by 20.7% and 40.57% in Brazil and China in 1999 and 1996, respectively. Malaria in the Peruvian, Amazon was successfully reduced until there were no cases due to aggressive active case detection and appropriate treatment [8,15].

According to WHO guidelines, artesunate is the first choice for simple or complicated malaria. It is administered singly or in combination with other drugs. Artesunate can kill all types of plasmodium and is well tolerated by the body [16]. Research in Irian Jaya carried out by comparing Artesunate+sulfadoxine-pyrimethamine with sulfadoxine-pyrimethamine singly found better effectiveness of the artesunate combination than sulfadoxine-pyrimethamine singly. This drug also has the ability to relieve fever symptoms quickly with a low therapeutic failure rate. The combination of drugs used with this drug prevents this resistance from occurring [17]. Artesunate-amodiaquin combination was effective to threat malaria in Madagascar [18].

Active case detection for one year succeeded in examining 296 people with symptoms of malaria, such as fever and chills, without positive patients. The decrease in malaria incidence is due to mass blood

surveys and active case detection programs, which enable symptomatic and asymptomatic patients to be immediately examined and treated. The mass blood surveys conducted in Peruvian, Amazon regularly eliminated the incidence of malaria until it became non-existent [19]. Likewise, in Vietnam, it succeeded in achieving a significantly low value [20,21]. A mass blood survey and active case detection in Sabang, Aceh also succeeded in controlling malaria cases. This program can effectively decrease malaria cases during a 5-year period [22].

5. CONCLUSION

In conclusion, a mass blood survey followed by active case detection was successfully used to eradicate malaria in Batunampar village, East Lombok. Therefore, detection of asymptomatic and symptomatic malaria and appropriate treatment are the keys to successful malaria eradication.

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Nadya Dwi Karsa, Sukri Rahman, Al Hafiz, Hirowati Ali, Hafni Bachtiar

Nasopharyngeal carcinoma (NPC) is a malignant tumor originating from the nasopharyngeal epithelial cells. Cell-mediated immunity has an important role in growth and development of cancer. Many studies have been conducted to predict the existence of an important relationship between immune checkpoints...

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M.A. Pamuji, B.S.R. Utomo, L. Marlina, J.A. Trixie, L. Tasya, V.N. Hutagalung, D.N. Esterini

Nasopharyngeal Carcinoma (NPC) is an epithelial carcinoma originating from the nasopharynx mucosa lining. It is the most common head and necks malignant globally, especially in Asia. NPC is mostly located in Fossa of Rosenmüller, an area that is hard to observe. To diagnose NPC, radiologic imaging and...

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Camelia Herdini, Danu Yudistira, Sagung Rai Indrasari

Maxillary giant cell tumor (GCT) is a rare benign bone lesion. It usually appears in the long bones. However, in the head and neck region GCT could also occur although the frequency is only 2% of the all GCT cases. We present a case of a 20-year-old female with GCT of left maxillary sinus who underwent...

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Nasopharyngeal carcinoma (NPC) is a malignant tumour of nasopharyngeal epithelium that has a unique distribution pattern. Nasopharyngeal carcinoma is not only geographically specific but also ethnically. Some ethnic groups tend to suffer NPC. Multifactorial interactions are presumed to be the cause of...

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Nasopharyngeal carcinoma (NPC) is a squamous cell malignancy originating from the nasopharyngeal epithelium. This tumor is more commonly found originating from the fossa of Rosenmüller, which is a transitional epithelial area. NPC has a high risk of regional metastases on the neck lymphnodes. However,...

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Yussy Afriani Dewi, Agung Dinasti Permana, Ifiq Budiyan Nazar, Bethy Suryawathy Hernowo

Diffuse large B-cell lymphoma (DLBCL) is a subtype of aggressive non-Hodgkin lymphoma (NHL). Diffuse Large B-cell lymphoma is a subtype of lymphoma most often found in the head and neck region. Overall survival could be used in assessing the effectiveness of therapies that may affect prognosis and survival...

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Covid-19 with nasopharyngeal cancer (NPC) comorbidities are rare in children. Post-chemoradiation cancer patients are one of the vulnerable groups to have Covid-19 infection. The Covid-19 infection could occur in an urban and rural area. More challenging issues occur in managing Covid-19 patients, furthermore,...

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Sinonasal Carcinoma Extirpation with Midfacial Degloving Approach

Veni Rosita Dewi, Denny Satria Utama

Nasal and paranasal sinus (sinonasal) malignancies are rare cases, accounting for only 1% of all malignancies of the body and 3% of malignancies of the head and neck. Patients with sinonasal tumors usually present with an advanced stage and generally have extended to the surrounding tissue. Surgery with...

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Corelation Between Epstein Barr Virus Epstein Barr Nuclear Antigen 1 DNA with Nasopharyngeal Carcinoma in Minangkabau Ethnic

Desy Ambriani, Sukri Rahman, Al Hafiz, Hirowati Ali, Hafni Bachtiar

Nasopharyngeal carcinoma (NFC) is a malignancy that come from the nasopharyngeal epithelial cell which is that distribution has been affected by geographic and ethnicity. NFC is caused by multifactorial causes, one of the is Epstein Barr Nuclear Antigen-1 (EBNA-1). EBNA-1 affects some of the signalling...

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Pembrolizumab Efficacy in Treatment of Carcinoma of the Head and Neck Squamous Cell

Yussy Afriani Dewi, Ifiq Budiyan Nazar, Betty S. Hermono

Immunotherapy acts by a system of immune modulation to destruct cells of cancer. Squamous cell carcinoma of the head and neck (HNSCC), this modality can be administered alone or combined with other therapies. Currently, immunotherapy with chemotherapy has shown better effectiveness as first-line systemic...

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Relationship of Nodule Type and Size with Thyroid Malignancy

Anton Sony Wibowo, Camelia Herdini, Bambang Udji Djoko Rianto

Thyroid carcinoma was the common head-neck malignancy. Clinical examination was essential at the initial suspicion of thyroid malignancy. Thyroid size and nodularity were the first things in a physical examination of the thyroid. This study aimed to determine the relationship between the type and size...

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Diagnosis and Management of Parapharyngeal Space Tumor Focus on the Trans Parotid Approach

Sukri Rahman

Parapharyngeal space (PPS) tumors are rare and constitute less than 1% of all head and neck neoplasms. Benign and malignant tumors can arise from various structures of the parapharyngeal space. The PPS is a space deep in the neck, shaped like an inverted pyramid. The parapharyngeal space is bounded medially...

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Research that Begins with a Patient in Front of You: *Legionella* Bacteria in Puddles on Roads

Ryota Sakamoto

In this article, I would like to describe researches that begin with a patient transferred to an emergency department of a local hospital in a rainy season. A patient transported after a car accident turned out to have Legionnaires' disease (LD). Although the causal relationship is unknown, *Legionella*...

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Hematologic Profile in Patients with Nasopharyngeal Carcinoma

Susilawati Susilawati, Hamsu Kadriyan, Wayan Putu Sutirtayasa

Nasopharyngeal carcinoma (NPC) patients who are undergoing chemoradiotherapy, it is important to have a hematological profile examination to see hemoglobin and erythrocyte levels, the incidence of infection that has an effect on leukocyte levels and the risk of bleeding arising from a decrease in platelet...

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Maxillofacial Fibrous Dysplasia

Christin Rony Nayoan, Dwi Antono, Rully Satriawan

Fibrous dysplasia (FD) is a rare and benign bone disorder, where normal bone and bone marrow are replaced by fibrous connective tissue mixed with irregular bone trabeculae. FD located in the maxillofacial area might lead to bone deformity, facial asymmetry, hearing loss, nasal congestion, pain, paresthesia,...

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Follicular Lymphoma Mimicking a Benign Submandibular Gland Tumor

Izry Naomi Lumbantobing

Follicular lymphoma of the submandibular gland is exceptionally uncommon. Lymphomas within the head and neck region do not have particular clinical behavior and manifestation. Furthermore, frozen section and fine-needle aspiration cytology can only provide a provisional diagnosis. Therefore, surgeons...

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Characteristics of Laryngeal Carcinoma Patients Who Underwent Surgery in Bali, Indonesia

I Gde Ardika Nuaba, Made Gita Ratnasari

Laryngeal carcinoma is a frequent malignancy in the world. However, limited data are found in Indonesia, including in Bali which is one of the famous tourism placed in the world. The purpose of this study was to determine the characteristics of patients with laryngeal carcinoma who underwent surgery...

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Association of Toll-Like Receptor-3 Polymorphism with Nasopharyngeal Carcinoma in The Minangkabau Ethnic Group

Putri Sari Ivanny, Sukri Rahman, Al Hafiz, Hirowati Ali, Hafni Bachtiar

Nasopharyngeal carcinoma (NPC) is an epithelial malignancy in the head and neck region that has a unique geographic distribution and is closely related to Epstein-Barr Virus (EBV) infection. The growth of malignancy due to viruses is largely determined by the host immune response. Toll-Like Receptors...

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Characteristics of Patients with Malignant Laryngeal Tumors in Annually Forest Fire Region in Indonesia

Rusina Hayati, Hamsu Kadriyan

Banjarmasin is one of the regions that annually face the forest fire. The fire led to the low quality of the air. The low quality of the air is one of the risk factors of the malignant laryngeal tumor. The characteristics of patient with malignant laryngeal tumor in Banjarmasin is remain unknown. This...

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Jakarta Head and Neck Oncology Surgery Priority Score (Ja-HOP)

Indra Parmaditya Pamungkas, Marlinda Adham, Bambang Hermani, Ika Dewi Mayangsari, Ferucha Moulanda

COVID-19 Pandemic has made a major change in the health care system including oncologic services. Elective surgery was mostly delayed to preserve resources and decreased COVID-19 transmission. Head and neck oncologic surgery will often be classified as "urgent" surgery and need special management in...

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COVID-19 Prediction Based on DWT and Moment Invariant Features of Radiography Image Using the Artificial Neural Network Classifier

Ditha Nurcahya Avianty, I Gede Pasek Suta Wijaya, Fitri Bimantoro, Rina Lestari, Triana Dyah Cahyawati

COVID-19 is an infectious disease caused by a family of coronaviruses, namely severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The fastest method to identify the presence of this virus is a rapid antibody or antigen test, but to confirm the positive status of a COVID-19 patient, further...

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Auricle Giant Papilloma in a 32 Years Old Indonesian Male: A Case Report

Edo Wira Candra

Head and neck squamous papilloma usually occur in the skin, oral mucosa and upper part of aerodigestive tract. Auricle giant papilloma is uncommon cases worldwide. We report a thirty-two years old Indonesian male seen with auricle giant black mass at our hospital, in Bogor. In this case, mass excision...

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Voice Improvement After Thyroid Surgery

Edo Wira Candra

Patients with enlarged thyroid gland (goiter) that cause paralysis of recurrent laryngeal nerve (RLN) or hoarseness usually have associated with thyroid malignancy. Malignancy can be directly or indirectly related to RLN. Cases of vocal cord paralysis associated with benign thyroid disease or goitre...

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Characteristics of Hearing Impairment in Patients with Nasopharyngeal Carcinoma in AR Bunda Hospital Prabumulih June 2018 - September 2019

Apriyanza Apriyanza, Denny Satria Utama

Nasopharyngeal carcinoma (NPC) is a malignant tumor that grows in the nasopharynx with predilection in the Fossa of Rossenmuller and roof of the nasopharynx. Clinical manifestations of nasopharyngeal carcinoma can be divided in Four categories: nasopharyngeal symptoms, symptoms of tubal dysfunction,...

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Management of Recurrent Regional Nasopharyngeal Carcinoma

Marlinda Adham, Gita Aryanti

Treatment result for nasopharyngeal carcinoma has improved drastically due to introduction of chemotherapy and radiotherapy combination. However, regional failure is still a common finding which occurs to 3-10% patients. Local failure can be divided into 2, residual and recurrent disease. Residual or...

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Quality of Life in a Patient with Total Laryngectomy Without Neck Dissection for Stage III Laryngeal Carcinoma A Case Report with EORTC QLQ-C30

Tengku Reza Alfisyah, Benny Kurnia, Lily Setiani, Marhaban Marhaban

Laryngeal cancer is a malignancy on larynx that may occur in glottis, supraglottic and subglottic. This malignancy is a second most carcinoma in head and neck area Clinical manifestation such as dysphonia, breathing obstruction, dysphagia, odynophagia, and hemoptysis. Reported a laryngeal cancer with...

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Hemiglossectomy with Supraomohyoid Neck Dissection on T3N1M0 Tongue Cancer Patient A Case Report

Karina Witary Ayu Siagian, Benny Kurnia, Fadhlia Fadhlia

Hemiglossectomy, surgical removal of half of the tongue, is one of the procedures for tongue cancer management. Surgery followed with supraomohyoid neck dissection (SOHND) is suggested to treat regional metastasis. SOHND is a selective neck dissection indicated for patients with T2, T3 tongue cancer...

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Management of Pleomorphic Adenoma of Submandibular Gland: A Rare Case

Elvita Nora Susana, Lily Setiani, Baluqia Iskandar

Pleomorphic adenoma is the most common benign tumor in the salivary glands but rarely in the submandibular glands. It is a mass in the submandibular, which is asymptomatic and painless. Excision of the tumor is a treatment that surgeons widely use. The study aimed to describe the management of pleomorphic...

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Management of Stage II Sinonasal Carcinoma (T2N0M0) with Transnasal Endoscopic Resection and Radiotherapy

Riska Handriani, Fadhlia Fadhlia, Benny Kurnia

Nasoethmoidal carcinoma is a malignant tumor found in the nasal cavity and ethmoidal sinuses. The early stage is rarely found due to the similarity of symptoms inflammatory process in sinonasal. The main modality for sinonasal cancer is surgery followed by radiation as adjuvant treatment. The prognosis...

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Management of Stage IVA Sinonasal Carcinoma Infiltrating Skin of Cheek: A Case Report

Luchia Elfira, Fadhlia Fadhlia, Benny Kurnia, Darmayanti Darmayanti

Advanced stage of sinonasal carcinoma that infiltrating skin of cheek is rarely found, surgery is still the main modality since the cancer has not penetrated the intracranial. Based on the distribution, Ohngren is divided into: suprastructure and infrastructure. To report the diagnosis and management...

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The Development of Health Capacity Index for a Semi-Quantitative Earthquake Hazards Risk Analysis with a Special Reference to the Lombok Earthquake Disaster 2018

Wilya Isnaeni, Suryani Asa'ad, Mochammad Hatta, Saidah Syamsuddin, Fahrin R. Andiwijaya, Didi S. Agustawijaya

Earthquakes often caused severe fatalities to human beings, as the case of Aceh earthquake 2004, and Lombok earthquake 2018. For the case of Lombok shallow earthquakes 2018, the earthquakes of a magnitude 7.0 have destroyed almost 800 thousand homes, and caused the death of more than 500 people. The...

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Cystic Adenomatoid Thyroid Nodule

Guntur Bayu Bima Pratama, Denny Satria Utama

Thyroid nodules are a common clinical problem. The prevalence of palpable thyroid nodules approximately 5% in women and 1% in men. In contrast, high-resolution ultrasound (US) can detect thyroid nodules in 19-68%. The clinical importance of thyroid nodules is to exclude thyroid cancer, which occurs in...

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Unilateral Benign Thyroid Lesion Management with Histopathology Results Following Surgery Was a Malignancy

Fadhlia Fadhlia, Elvita Nora Susana

Benign thyroid lesions are cellular differentiation into enormous sizes that can be seen from the outside without interfering with thyroid hormone. The FNAB and USG were used to diagnose thyroid lesions. Unilateral benign lesions may be treated with lobectomy or isthmus lobectomy. Case report: A 40-year-old...

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Extranodal Natural Killer (NK)/T-cell Lymphoma Nasal type A Case Report

Selvianti Selvianti

Extranodal Natural Killer (NK) / T-cell Lymphoma, Nasal type (ENKTCL-NT) is a rare type of Non-Hodgkin Lymphoma (NHL), commonly involves midline areas of the nasal cavity, oral cavity, and/or pharynx. ENKTCL-NT has a very strong relationship with Epstein Barr virus (EBV) infection. Treatment of ENKTCL-NT...

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Surgical Management of Tympanojugulare Paragangliomas: A Rare and Challenging Case of Vascular Neoplasma

Dinna Astrib, Masyita Gaffar, Nova Pieter

Tympanojugulare paragangliomas (TJPs) are benign tumors arising from neural crest cells located along the jugular bulb and the tympanic plexus. TJPs have always presented a challenge to surgeons due to the fact that these tumors are vascularize and locally aggressive and involve important neurovascular...

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Bilateral Non-Invasive Follicular Thyroid Neoplasm with Papillary-Like Nuclear Features (NIFTP) Presenting in a Female Child

Ade Burhanudin

Non-invasive follicular thyroid neoplasm with papillary-like features (NIFTP) is a benign thyroid lesion without recurrence or distant metastasis. The management of NIFTP can be partial or total thyroidectomy, which is sufficient to provide a perfect cure rate. Most cases of NIFTP were found in adults...

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Tornwaldt Cyst: Rare Benign Neoplasm Mimicking Nasopharyngeal Carcinoma

Evans Gunterus, Alamanda Monik

Nasopharyngeal cancer (NPC) is the fifth most common cancer in Indonesia and highest in head and neck area. Its most common manifestations ever reported in Indonesia were unilateral ear problem, followed by persistent nasal obstruction, blood nasal secretion, cephalgia, lymph node enlargement, and tinnitus...

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Acquired Long QT Syndrome (LQTS) Secondary to Electrolyte Imbalance: A Case Report

Yusra Pintaningrum, Ketut Angga Aditya Putra Pramana

The long QT syndrome (LQTS) is a one type of severe cardiac arrhythmia syndrome that leading cause to unexpected cardiac death, characterized with impaired ventricular repolarization caused by hereditary disorder in sodium and potassium channels on cardiac myocyte and acquired caused by drugs or electrolyte...

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Mortality Rate of People Living with HIV/AIDS on Injection Drug Users (IDU) Compared to Non-Injection Drug Users (non-IDU)

Ni Pt Wr Pradnya Nirmala Putri, Jaini Rahma, Nabila Aisyah Putri, Putu Wika Pramesti Iswari, Salsabila Chauna, Wina Arsylia Fakar, Cut Warnaini

Risk factors for transmission of HIV/AIDS are heterosexual (84.7%), Injection Drugs User (IDU) (5.7%), homosexual (4.7%), perinatal transmission (4.6%) and blood transfusion (0.1%). As the second-largest risk factor, IDU is a serious public health concern because of its high potential in transmitting...

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Tramiprosate as a Novel Treatment for Mild-Moderate Alzheimer Disease A Systematic Review

Abiyyu Didar Haq, Visakha Vidyadevi Wiguna, Putu Diah Ananda Putri Atmaja, Cut Warnaini

Alzheimer Disease (AD) is a chronic neurodegenerative disease. Currently, treatment for AD is limited to symptomatic treatment only, which are cholinesterase inhibitor and memantine. Acting as a symptomatic treatment, those drugs don't act on the pathogenesis of AD. Tramiprosate is a small aminosulfate...

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"COMMANDO" Procedures in Cancer of the Head & Neck: Short Communication

Geng Ju Tuang, Chong Sian Ng, Mohd Razif Mohamad Yunus

The "COMMANDO" procedure has been regarded as an intrepid surgical technique in the field of otolaryngology. The procedure involves resecting a portion of the mandible along with neck dissection and removal of the primary intra-oral tumor. Herein, the authors narrated on the indications of composite...

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Education Level as a Predictor for Health Literacy Levels in a Rural Community Health Centre
A Cross-Sectional Study

Fahrin Ramadan Andiwijaya, Hamsu Kadriyan, Arfi Syamsun

Health literacy is an important determinant in individual health and public health. However, evidence suggests that there are still disparities in health literacy levels between different socio-economic and education backgrounds. This study aims to look at level of education as a predictor for achieving...

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Lessons Learned from Online Qualitative Data Collection in an International Collaborative Study During the COVID-19 Pandemic
Teachers' Effort to Cope with Conflict in Implementing Comprehensive Sexuality Education at Secondary Schools in Mataram City, Indonesia

Fumiko Shibuya, Dian Puspita Sari, Cut Warnaini, Arina Windri Rivarti, Rie Takeuchi, Hamsu Kadriyan, Calvin de los Reyes, Jun Kobayashi

An online survey was conducted for an international collaborative study from a remote area during the COVID-19 pandemic because the researchers needed to consider non-face-to-face methods of conducting an international collaborative study in situations in which social distance must be maintained. In...

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The Association Between Prenatal Care (PNC) Coverage and Distribution of Iron Supplements with Cases of Non-infectious Disease in Pregnant Mothers in Narmada Public Health Center (PHC), West Lombok in 2020

Cut Warnaini, Lina Nurbaiti, I Dewa Gede Ngurah Agung, I Wayan Inggita Darmawan, Baiq Maygina Nafsa Sulan, Nikita Andini Putri, Siti Fadhila Musafira, Paul Dugdale

Disturbances at an early stage, provide immediate intervention and prevent death. During PNC visits, mothers will also receive supplements such as folic acid and iron that help in preserving their healthy condition. This study aims to identify the association between PNC coverage and distribution of...

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Acute Dysbaric Disorders: A Case Series in The Hyperbaric Center in Lombok 2016-2020

Eustachius Hagni Wardoyo, Devi RM Tarigan

This study aimed to describe acute dysbaric disorder (ADD) in the hyperbaric center in Lombok during 2016-2020. All types of ADD diagnosis which attend to Diving Health and Hyperbaric center Mataram General Hospital (DHM) 2016-2020 were included in the study. Secondary data of Medical Record then analyzed...

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Zinc Deficiency among Adolescence in Stunting Locus Area, Lombok, Indonesia

Deasy Irawati, Lina Nurbaiti, Ardiana Ekawanti

Adolescence is at risk for zinc deficiency due to their high acceleration of growth, with bone mineral deposition reaching 80-90% by the adolescent phase. In zinc deficiency, adjustments in zinc pools were made, including the release of zinc retention in bones. Severe zinc deficiency could lead to growth...

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A Rare Case of Embolic Stroke in Patient with Uncorrected Pentalogy of Fallot: A Case Report

Yusra Pintaningrum, Ketut Angga Aditya Putra Pramana

Pentalogy of Fallot is cyanotic type congenital heart disease that characterized with anatomical anomalies in Tetralogy of Fallot and atrial septum defect or patent foramen ovale. That condition makes cyanosis because of diminished oxygenated blood flow to the organs. Cerebrovascular accidents like embolic...

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Nasopharyngeal Carcinoma Patient Characteristics at Sayang General Hospital Cianjur West Java

Eman Sulaiman

Nasopharyngeal carcinoma (NPC) is the most common head and neck malignancy in Indonesia, placing it as the fourth most common among all malignancies in Indonesians. NPC has different characteristics from other head and neck epithelial tumors in respect of epidemiology, histopathology findings, diagnosis...

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Different Outcome in Early and Late Abdominal Pregnancy A Case Series on Abdominal Pregnancy at West Nusa Tenggara Hospital

Febie Putra Suwana, I M.W. Mahayasa, Muhammad Rizkinov Jumsa Jumsa, A. Karima

Abdominal pregnancy is a very rare and very dangerous type of ectopic pregnancy, this kind of pregnancy occurs in 1: 10.000 to 30.000 pregnancies (1,4% of all ectopic pregnancies). This kind of pregnancy is a challenge to diagnose and treat, especially in a developing country such as Indonesia. In this...

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Pregnancy and COVID-19 Policy and Strategy

Ario Danianto, Putu Diah Ananda Putri Atmaja, Muhammad Rizkinov Jumsa, Intan Wahyu Lasiaprillianty, Meilisva Audila Anggraini

COVID-19 has led to a global emergency because of its infectivity to the general population, especially the vulnerable population, pregnant women. Changes in the immune system of pregnant women made them more vulnerable to developing adverse complications COVID-19. This study evaluates pregnant women...

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Mucormycosis in Healthy Young Man A Case Report in Indonesia

Metta Octora, Arthur Pohan Kawilarang, Eddy Bagus Wasito

Mucormycosis is one of the most common invasive fungal infections. Unlike other filamentous fungi, Mucorales additionally may be a frequently lethal infection in immunocompetence patient. We describe a 22-year-old male patient that presented wound of right lateral eye and right face, as well as pain...

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Placenta Previa Accreta: A Case Report on Management of Elective Cesarean Delivery at Tertiary Hospital in West Nusa Tenggara

Ainun Karima, G.M Punarbawa, Muhammad Rizkinov Jumsa, F.P. Suwana.

The Incidence and prevalence of placenta accreta and placenta previa has increased due to the increasing numbers of cesarean deliveries. Placenta accreta is one of the most serious complications of pregnancy and is often associated with placenta previa and severe obstetric hemorrhage and one of an important...

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Cell Multiplication in Platelet Rich Fibrin (PRF) and Platelet Rich Plasma (PRP) as Biofuels for Cartilage Tissue Engineering

Ahmad Taufik S, Adnanto Wiweko, Devi Rahmadona, Dyah Purnaning, Mohammad Rizki, Bayu Tirta Dirja

Cartilage injury remains a major orthopedic challenge due to its low repair capacity, with the tendency to cause osteoarthritis. In addition, the treatment method involving platelet rich plasma (PRP) and platelet rich fibrin (PRF) as cartilage engineering components greatly anticipates promising recovery...

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Mass Blood Survey Followed by Active Case Detection Success to Eradicate Malaria in Batunampar Village, Jerowaru Subdistrict, East Lombok, West Nusa Tenggara, Indonesia

Ahmad Taufik S, Adnanto Wiweko, Didit Yudhanto, Deasy Irawati, Heru Farah Subaktianto, Lalu Hamzi Fikri, Mohammad Rizki, Seto Priambodo, Mulyanto Mulyanto

Malaria is an endemic that often occurs in the coastal areas of East Lombok, West Nusa Tenggara. One of the most common ways of spreading this parasite is through asymptomatic malaria. Therefore, mass blood surveys and active case detection are needed to identify parasitemia and eradicate malaria in...

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How Early Detection Error Can Lead to Severe Prognosis in Patient with Post-Partum Urinary Retention: A Case Report of Two Cases

Nada Nafisha Humaera, Muhammad Rizkinov Jumsa

Postpartum urinary retention (PUR) is a condition with a post-void residual volume of more than 150 mL. The incidence of PUR is not clear because of an undiagnosed asymptomatic condition. According to from literature incidence of PUR is about 0.05%-37%. Neglected PUR may result in anuria, hydronephrosis,...

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Assessing Effectiveness of the Dengue Hero Board Game in Improving Children's Knowledge and Attitudes on Dengue Prevention: A Randomized Controlled Experiment

Mochamad Bagus Ferdiawan, Sigit Kusdaryono, Dewi Suryani, Dian Puspita Sari

Educational board games have been used as an alternative method for health promotion and education. This study aimed to assess the effectiveness of the Dengue Hero board game in improving children's knowledge and attitudes regarding Dengue prevention compared to the conventional, lecture-based health...

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Validity and Reliability Test of the Short Form-36 (SF-36) Item Health Survey in Indonesian Version of Post-Heart Attack Patients in Mataram City

I Wayan Manacika Surya Dharma, Dian Puspita Sari, Basuki Rahmat

The Indonesian version of the SF-36 Item Health Survey instrument measured quality of life in patients with chronic diseases. However, the validity and reliability of this instrument have not been tested in the post-heart attack patient population. This study aimed to assess the construct validity and...

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Three Rare Cases of Otolaryngology Tuberculosis: A Report of Extra-Pulmonary Tuberculosis Cases in the Larynx, Tonsil and Parotid

Hamsu Kadriyan, Ima Arum Lestari, Fathul Djannah, Fahrin Ramadan Andiwijaya

Tuberculosis (TB) remains a global health problem, and in the South-East Asia Region, 15% are extra-pulmonary TB (EPTB). The occurrence of EPTB in the upper airway, tonsil and the parotid gland is a rare finding. Moreover, EPTB in these regions would present mimicking symptoms as common ENT cases. The...

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Management of Atypia of Undetermined Significant Thyroid Nodule

Ika Dewi Mayangsari, Ferucha Moulanda

Thyroid nodules are one of frequent clinical problem with prevalence of 5% palpable nodules. Results of atypia of undetermined significance (AUS) can be found with risk of 5-15% malignancy rates. Management of AUS is still challenging and complex including observation until surgical approach. We present...

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Study of SARS-COV 2 Antibody Level Before and After the Third Covid-19 Vaccine Booster on Health Worker in Province of Nusa Tenggara Barat General Hospital

Rina Lestari, Indana Eva Ajmala, Prima Belia Fathana, Yusra Pintaningrum

Vaccination is one of the ways that countries around the world to manage the COVID-19. The effectiveness of a vaccine can be assessed from the degree of protective antibodies produced after the vaccination program. The purpose of this study was to determine the levels of SARS-CoV-2 antibodies in the...

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Community Resilience in the Time of the COVID-19 Pandemic: A Qualitative Study on Local Perspectives in the Island of Lombok

Fahrin Ramadan Andiwijaya, Hamsu Kadriyan, Putu Suwita Sari, Jun Kobayashi, Suryaning Rasyidah, Lalu Hamzi Fikri

The Coronavirus disease (Covid-19), was declared a pandemic as it spread globally. In Indonesia the initiatives on mitigation and slowing the spread of the disease focused on physical distancing efforts. Focusing in Mataram, the main region of the Island of Lombok, West Nusa Tenggara Province. We analysed...

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The Review of *Baccaurea racemosa*: Neglected Plants, but Potential to be Developed

Lina Permatasari, Sugeng Riyanto, Abdul Rohman

The *Baccaurea racemosa* was the plant that spread in the Southeast Asia. *B. racemosa* fruit had a sour taste, so that the economy of this plant was low. *B. racemosa* has almost been forgotten in people. If this plant bears fruit, the fruit is often neglected. If the fruit is sold, the price will be low...

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Laboratory Profiles of Nasopharyngeal Carcinoma Patients

Nur Akbar Aroeman, Ifiq Budiyan Nazar, Yussy Afriani Dewi

Nasopharyngeal Carcinoma (NPC) is one of the most common head and neck malignant neoplasms worldwide. Laboratory profile is rarely evaluated in Indonesia as a prognostic consideration. The aim of this research is to describe the laboratory profile of NPC patients. This is descriptive research using a...

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Correlations Between Laboratory, Clinical and RT-PCR Parameters in Covid-19 Patients Admitted in Nusa Tenggara Barat General Hospital

Prima Belia Fathana, Rina Lestari, Indana Eva Ajmala, Metta Octora

The main problems faced by the COVID-19 pandemic are the high risk of transmission, the lack of fast and valid screening tools, and the length of the disease healing process it will indirectly affect the speed of transmission. This study aimed to assess the clinical correlation and laboratories of COVID-19...

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The Effect of Monosodium Glutamate Administration on Estradiol Levels on Pregnant Wistar Rats

Dian Soekmawaty Riezqy Ariendha, Fitri Apriyanti, Arni Amir, Yanwirasti Yanwirasti

The purpose of this study was to see the influence of the MSG administration to the estrogens levels, progesterone levels, and the quantity of infant on pregnant Wistar rats. The design of this study was experimental research with post test only control group design on 24 samples pregnant albino Wistar...

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Association of Metabolic Syndrome with Cardiovascular Mortality in The Elderly: A Meta-Analysis

Erieka Febriayana Rosiva, Muhammad Miftahul Hadi, Yusra Pintaningrum

Metabolic syndrome should be considered an important issue in elderly individuals, as aging is a major contributor to the prevalence of the constellation of cardiovascular and metabolic risk factors that constitute the syndrome. However, recent studies that have investigated metabolic syndrome as a predictor...

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