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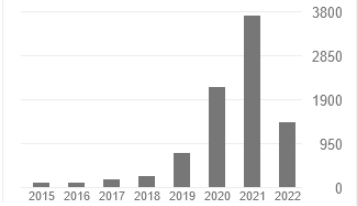
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
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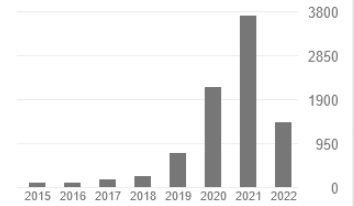
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[Validity And Reliability Of The Indonesian Version Of The Conduct Disorder Rating Scale \(CDRS\)-Parent And Teacher As An Initial Screening For Conduct Disorders In Elementary School Children](#)

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[Antimicrobial and Antibiofilm Activity of D-amino acids Combined with Nanoparticles against Candida albicans](#)


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[Relationship between Previous Traumatic Experience, Post-Traumatic Growth, Coping Strategy to Mental Health State on Refugees in Sidoarjo Camp](#)

 Era Catur Prasetya, Nalini Muhdi, Atika Atika

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[Impact of Omega-3 on Hypercholesteremia Induced Male Rabbits](#)


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[The Effect of Immersion of 12,5% Basil Leaves and 25% Mauli Banana Stem Mixture Extracts on Surface Hardness, Surface Roughness and Discoloration of Acrylic Resin](#)

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[Influencing Factors the Behavior of Housewives Living Near the Railroad Tracks in Preventing Hearing Loss](#)

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[Analysis of Fathers' Support Based on Maternal Perceptions Through Stunting Incidence in Toddler at Coastal Areas](#)

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SRP. 2020; 11(5): 761 - 767

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[Phytochemical Screening, Antioxidant Activity, Functional Groups and Chemical Element Characterization Analysis of \(-\)-Epigallocatechin-3-Gallate \(EGCG\) in East Javanese Green Tea Methanolic Extract: An Experimental In Vitro Study](#)

👤 *Ida Bagus Narmada, Andari Sarasati, Satutya Wicaksono, Fianza Rezkita, Kadek Gede Putra Wibawa, Suhailah Hayaza, Alexander Patera Nugraha.*

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[Immunohistochemical Study of Adenomatous Polyposis Coli Protein in Colorectal Carcinoma and its Precursor Lesions in Iraq](#)

👤 *Kaswer Musa Jaafar Altoriah, A Alaa Salah Jumaah, Adeeb Abdulally Abdulhussein, Asaad Abdul Hamza Aljanabi, Hawraa Sahib Al-Haddad, Aseel Al-Quzweni, Najah R. Hadi*

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[Clinical Outcomes of Stem Cell Metabolites Formula Derived from Placenta for Skin Regeneration](#)

👤 *Purwati, Afif Nurul H, M. Yulianto Listiawan, Ernawati, Fedik A. Rantam, Medhi Denisa A, Novianti Risky R, Ardhiyah Iswanda P, Imam Susilo, Diah Puspita R, Afriyanti Sandhi, Prasasta Adhistana.*

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[The Association between a Genetic Polymorphism in the Promoter Region of the CYP17 Gene and Sebum Level on Acne Vulgaris](#)

👤 *Evi Mustikawati Arifin, Syafruddin Amin, Anis Irawan Anwar, Budu, Burhanuddin Bahar, Muh. Nasrum Massi, Huldani, Sri Ramadhany, Marhamah F. Singgih.*

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[The Potency of Hematopoietic Stem Cells \(HSCs\) and Natural Killer \(NK\) Cells as A Therapeutic of SARS-CoV-2 Indonesia Isolates Infection by Viral Inactivation \(In Vitro Study\)](#)

👤 *Purwati, Andang Miatmoko, Nasronudin, Deya Karsari, Aristika Dinaryanti, Eryk Hendrianto, Igo Syaiful Ihsan, Nora Ertanti, Disca Sandyakala Purnama, Tri Pudy Asmarawati, Erika Marfiani, Zamrotul Izzah, Alfian Nur Rosyid, Prastuti Asta Wulaningrum, Herley Windo Setiawan.*

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👤 *Lukas, Eko Prasetyo Nugroho, Harlianto Tanudjaja, Kumala Indriati.*

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[Prevalence of Toxic Shock Syndrome Toxin-1 \(TSST-1\) Produced by Staphylococcus](#)

[aureus Isolated from Patient Combined Psoriasis with Urinary Tract Infections \(UTIs\) and Gastroenteritis in Age Groups Between 8-18 Years](#)

[Ala'a Abdhusein Abdulzahra, Rabehshakir Al-Jameel, Mohammed Abd-ZaidAkool, Dheyaa ShnanAl-Jameel.](#)

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[A Review of Nonsteroidal Anti-Inflammatory Drugs \(NSAIDs\) Medications in Dentistry: Uses and Side Effects](#)

[Marhamah F. Singgih, Huldani, Harun Achmad, Bayu Indra Sukmana, Austin Bertilova Carmelita, Aminuddin Prahata Putra, Sri Ramadhany, Andika Puspita Putri.](#)

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[Studies on the Photostability of Polystyrene Films with New Metals Complex of 1, 2, 4-triazole-3-thione Derivate](#)

[Ali M. A. Al-Khazraji, Rehab A. M. Al Hassani, Ahmed Ahmed.](#)

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[The Ameliorative Effects of Omega-3, Melatonin and their Combination Against Aluminum Chloride Induced Oxidative Stress in Albino Rat Brain](#)

[Israa Mahmood Mohammed, Khabat Anwar Ali.](#)

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[Impact of Complementary Foods and Environmental Sanitation on the Incidence of Diarrhea in Children aged 6-24 Months in Sidoarjo, Indonesia](#)

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[Anti- inflammatory and Anti- Arthritic Activity of Nanocurcumin in Albino Rats against Freund's Complete Adjuvant Induced- Arthritis](#)

[Zrar Saleem Kareem Almarzany](#)

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[Scabies Infection in Thi-Qar Province](#)

[Hind M. Mousa, Ahmed G. Hassan](#)

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[Synthesis, Characterization and Spectroscopic Study of New Metal Complexes form Heterocyclic Compounds for Photostability Study](#)

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[The Promising Barrier: Theoretical Investigation](#)

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[A Reviews on Use of Sea Cucumber as a Treatment for Oral Cancer](#)

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[Regional Budget Politics: Versus Consensus of Power](#)

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[Food Consumption Behavior and their Association with Metabolic Syndrome: A cross-Sectional Study of Adult in Gorontalo Province, Indonesia](#)


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[Morphological Maxillary Inter-Incisor Width in Indonesian Sundanese Children with Beta Thalassemia Major](#)

 Eriska Riyanti, Risti Saptarini Primarti, Naninda Berliana Pratidina, Prima Andisetyanto, Selvia Yunita, Iwan Ahmad Musnamirwan, Eka Chemiawan, Sri Ramadhany, Marhamah F. Singgih.

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[Cytomegalovirus UL83 Gene as Diagnostic Marker for Preliminary Infection in Pregnant Women in AL-Najaf City](#)


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[Biochemical and hematological parameters as a predictor for COVID -19 infection in 65 patients diagnosed by real time ?PCR in Kirkuk city](#)

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[Intravitreal Implantable Film Containing Ketorolac Tromethamine Microsponges ? In Vitro/In Vivo Correlation](#)

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[Psychosocial Impact of Acne Vulgaris among Adolescent Iraqi Patients](#)

 Acne Vulgaris; Adolescents Dermatitis; CADI; Quality of Life; Psychosocial Impact; GAGS

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[Effect of Cobalt Addition on the Cytotoxicity and Cell Attachment of Titanium Alloys](#)

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[Amino Acid Profile and Content in Crude Herbal Drugs \(Fruits\) of Rosaceae Species](#)

👤 *Sergunova E.V., Bokov D.O., Bobkova N.V., Kovaleva T.Yu., Chromchenkova E.P., Bessonov V.V.*

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[Human resource orchestration in partnership companies: a multiple case study](#)

👤 *Juliani Dyah Trisnawati, Indrianawati Usman, Dwi Ratmawati.*

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[The Effect of Topical Curcumin Extract on Fibroblast Count and Collagen Density as an Indicator on Accelerating Clean Wound Healing Process: A Study on Wistar Rats](#)

👤 *Erick Berto Yahya, Ariandi Setiawan, Marjono Dwi Wibowo, Edwin Danardono.*

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[Indonesia-South Korea Extradition Agreement as a Form of Cooperation in Efforts to Eradicate International-Scale Crimes](#)

👤 *Lynda Asiana, Supanto, Hari Purwadi*

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[Comparison of Anti-Oxidant Activity of Different Brands of Esomeprazole Available in Iraqi Pharmacies](#)

👤 *M. Alfahad, M. E. Qazzaz, M. N. Abed, F. A. Alassaf, M. H. M. Jasim.*

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[To Consider The Organogel Of Span 40 And Span 60 In Sesame Oil As A New Member In The Gastro Retentive Drug Delivery Systems](#)

👤 *Zainab Saad Kaddoori, Masar Basim Mohsin Mohamed, Wesam R. Kadhum, Nawfal Am. Numan*

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[Hematological changes among Corona virus -19 patients: a longitudinal study](#)

👤 *Nasser Ghaly Yousif, Ahmed N. Altimimi, Fadhil G. Al-amran, Lee, J Adrienne, Samar Muayad Al-Fadhel, Salwa Riyadh Hussien, Najah R. Hadi, Maitham G. Yousif, Mohammad AG. Alfawaz, Kareem G. Mohammed*

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[Determination and Evaluation of Doses of Metronidazole in Different Quantities and Formulations with Multiple Spectroscopic-Methods](#)

 *Khawla Salman Abd-Alrassol, H. N. K. AL-Salman, Ekhlal Qanber Jasim, Hussein H. Hussein*

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[Effect of Aloe vera Extracts towards the Fibroblast Number and Collagen Thickness on Clean Skin Wound Healing on Rattus Novergicus](#)


 *Rezky Sagita Girsang, Marjono Dwi Wibowo, Ariandi Setiawan*, Edwin Danardono*

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[ENHANCEMENT MODEL FOR HOSPITAL QUALITY SERVICE WITH CONSIDERATION OF INTEGRATING PATIENTS HEALTH INSURANCE TO UTILIZE FINTECH](#)


 *Fauzi Arif Lubis, Nurlaila, Ismail Husein, Susilawati, Muhammad Lathief Ilhamy Nasution, Marischa Elveny, Afnaria, Nurlama Siregar.*

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[Comparative Characteristics of Osteofixators in Treatment of Dogs with Cranial Cruciate Ligament Rupture](#)

 *Sergey Pozyabin, Yuri Vatnikov, Dmitry Kachalin, Evgeny Kulikov, Grigorii Kukovenko, Elena Piven, Olesya Petrikhina, Alexander Strachuk, Aleksandr Petrov, Irina Popova, Daria Lukina, Esam Almenshavi.*

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[Effect of Bovine Dried Amniotic Membranes as Prosthesis of Abdominal Fascial Defect Closure Reviewed from The Level of Density Collagen Type I and III in Rattus novergicus Wistar Strain](#)

 *Ahmad Jazlanardi Primaditya Wardhana, Fendy Matulatan, Marjono Dwi Wibowo, Edwin Danardono*

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[An Experimental Trial to Prepared y1 34.5 Herpes Simplex Virus 1 Immunogene by cloning Technique](#)

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[Top-Down Orientation on Fourth Industrial Revolution: A Literature Review](#)

 *Mansoor Ahmed Soomro, Mohd Hizam-Hanafiah, Nor Liza Abdullah*

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[Antibacterial and Phytochemical Analysis of Two Plants Menispermaceae Family](#)

 *Silvia Anitasari, Sjarif Ismail, Bayu Satria Wiratama, Hendrik Setia Budi*

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[Social, Environment and Economy: Community Empowerment in Utilizing Organic Waste as Batik Dyes through CSR](#)

 *Endah Nurhawaeny Kardiyati, Mahendra Wijaya, Suwanto Suwart, Supriyadi Supriyadi.*

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[The Relationships Among Service Quality, Emotional Satisfaction and Behavioural Intention In Childcare Provider Choice: Evidence From Malaysia](#)

 *Nik Syuhailah Nik Hussin, Safiek Mokhlis, Hayatul Safrah Salleh, Zuraimi Abdul Aziz*

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[Controlled Glycolysis as the Basis of Beer Technology with Specified Consumer Properties](#)

 *Lyudmila Tretyak, Maksim Rebezov, Nadezhda Kenijz, Mars Khayrullin, Vera Gribkova, Andrey Goncharov.*

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[Phase 2 Study Assessing the Bactericidal Effects of Electrolyzed Oxidized Water as an Antiseptic towards the Reduction of The Peristomal Germ Density Level in Child Colostomy in Dr. Soetomo Hospital, Surabaya](#)

 *Bonni Saptia Pratidina1, Ariandi Setiawan, Maryono Dwi Wibowo3, Edwin Danardono4.*

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[The Barriers Of International Expansion: A Study On Education And Learning Centre Franchisors](#)

 *Nurul Ashykin Abd Aziz, Mohd Hizam Hanafiah, Hamizah Abd Hamid, Rosmah Mat Isa*

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[The Role of Lymph-vascular Space Invasion towards Disease of Free Survival and Overall Survival Cancer in High-Risk Endometrial Cancer Endometrioid Type Patients](#)

 *Brahmana Askandar Tjokroprawiro, Trianggono Bagus Ariyanto, Indra Yuliaty, Willy Sandhika.*

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[The Regulation of Independent Candidates in Organizing Regional Head Elections in Indonesia: A literature Review](#)

Adnan Purichta Ichsan, Syamsul Bachri, Marwati Riza, Hamzah

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[Characteristics of Suspected Malignant Ovarian Tumor Patients Who Performed Surgery at Tertiary Referral Hospital](#)

Brahmana Askandar Tjokropawiro, Nila Krisna Sari, Indra Yuliati, Lies Mardiyana.

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[Differences of Dried Amniotic Membrane Effect on Healing of Gastric Tissue Post Penetrating Trauma Reviewed from Collagen Thickness and Fibroblast Count](#)

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[Advancements in development and characterization of Single Droplet Combustion: A review](#)

Adhes Gamayel, M.N. Mohammed, Salah Al-Zubaidi, Eddy Yusuf

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[Characterization and Physicochemical Properties of Biofuel from Mixed Crude Jatropa Oil and Clove Oil](#)

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[The Mechanism of Endoplasmic Reticulum Stress and the Cyclin D2 Expression on Ovarian Granulosa Cell Cycle in Infertile Women with Endometriosis](#)

Jimmy Yanuar Annas, Hendy Hendarto, Erry Gumilar Dachlan, Samsulhadi, Soegiharto Soebijanto, Eu Leong Yong.

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[Increasing Neoadjuvant Chemotherapy in Nasopharyngeal Carcinoma Patients](#)

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[Biocoenotic Diagnostics of Unfavorable Factors in the Cows Infection of Farms in the Moscow Region](#)

✎ Pavel Rudenko, Victoria Rudenko, Yury Vatnikov, Andrei Rudenko, Evgeny Kulikov, Nadezhda Sachivkina, Elena Sotnikova, Nikolai Sturov, Ekaterina Rusanova, Tatiana Mansur, Sergey Vyalov, Nikolay Sakhno, Stanislav Drukovsky.

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[High-Level of Notch 1/Jagged 1 Level up Regulated Chemo-Resistance of Cisplatin in NSCLC](#)

✎ Nasser Ghaly Yousifa, Alla Mohammed Sadiqueb, Laith Mohammad Abbas Al-Huseinic, Muntadher NoamanJassimd, Najah R. Hadie, Fadhil Al-Amranf

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[Assessment of Respiratory Rate in Dogs during the Sleep with Mitral Valve Endocardiosis, Complicated by Congestive Heart Failure Syndrome: the Degree of Adherence for this Test by Animal Owners and its Impact on Patient Survival](#)

✎ Andrei Rudenko, Pavel Rudenko, Igor Glamazdin, Yury Vatnikov, Evgeny Kulikov, Nadezhda Sachivkina, Victoria Rudenko, Nikolai Sturov, Nikolay Babichev, Elena Romanova, Ekaterina Rusanova, Daria Lukina.

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[Evaluation of Statin Therapy on Lipid Profile of Diabetic Dyslipidemia Patients](#)

✎ Soebagijo Adi Soelistijo, Wynne Widiarti, Bambang Hermanto.

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[Evaluate the fPSA for Discriminate between Prostate Cancer Patients \(PCa\) and Benign Prostatic Hyperplasia \(BPH\) Depending on PSA Fucosylation by Using Nano-Lectin Immunoassay](#)

✎ Aamer M. Ali*, Omar F. Abdul-Rasheed, Ahmed Turki Obaid.

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[Phenolic Compounds and Biological Activity of Badan \(Bergenia crassifolia \(L.\) Fritsch\) Leaves Growing in Russia](#)

✎ Kovaleva T.Yu., Ermakova V.A., Dorovskih E.A., Trashchenkova D.A., Bokov D.O., Shilova I.V., Samylina I.A..

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[Outcome and Radiotherapy Side Effects of High-Risk Endometrial Cancer](#)

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Increasing Neoadjuvant Chemotherapy in Nasopharyngeal Carcinoma Patients

Muhtarum Yusuf*, Andri Foris

Department of Otorhinolaryngology Head and Neck Surgery, Faculty of Medicine-Dr. Soetomo Teaching Hospital, Universitas Airlangga, Surabaya 60131, Indonesia

ABSTRACT

Nasopharyngeal carcinoma (NPC) has radiosensitive and chemosensitive properties. The lack of radiotherapy devices makes concurrent chemoradiation difficult in Indonesia. Thus, neoadjuvant chemotherapy is the most commonly given treatment option as initial management in patients with NPC. This study determined the profile of patients receiving neoadjuvant chemotherapy. This study was conducted retrospectively using secondary data derived from medical records of NPC patients treated at the Inpatient Ward, Dr. Soetomo General Hospital, Surabaya, Indonesia, from January to December 2018. Among 166 NPC patients undergoing neoadjuvant chemotherapy, there were 76.51% male and 23.49% female, and mostly were in the age group of 41-50 years. The majority of patients were with stage IVA NPC and type III histopathology. Most patients underwent 6 cycles of neoadjuvant chemotherapy. Cisplatin-Paclitaxel was the most widely used regimen, and 28.31% patients experienced regimen changes during chemotherapy cycle. The lack of radiotherapy devices causes concurrent chemoradiation which cannot be given widely to NPC patients and increases the number of neoadjuvant chemotherapy cycles, while waiting for the radiotherapy schedule.

Keywords: Nasopharyngeal carcinoma, neoadjuvant chemotherapy, chemotherapy cycle.

Correspondence:

Muhtarum Yusuf, MD, PhD

Department of Otorhinolaryngology Head and Neck Surgery, Faculty of Medicine-Dr. Soetomo Teaching Hospital, Universitas Airlangga, Surabaya 60131, Indonesia
Tel: +6231-550-1645; Fax: +6231-502-2472
E-mail: muhtarumyusuf@yahoo.co.id

INTRODUCTION

Nasopharyngeal carcinoma (NPC) is a malignant tumor arising from epithelial nasopharyngeal mucosa easily infiltrating local tissues, metastasis, and having rapid tumor growth (1,2). Factors that play a role in the pathogenesis of NPC include Epstein Bar virus, genetic susceptibility, and environment. Epstein Bar virus also may cause gastric cancer as a coinfection similar to *Helicobacter pylori* (3,4). Radiotherapy and chemotherapy are main therapy for tumor (5). NPC is the one of disease with poor prognosis because of the position of the tumor adjacent to the skull base and vital structures (6). NPC also has radiosensitive and chemosensitive properties. Radiotherapy is the main therapeutic modality because of the highly radiosensitive nature of NPC and the location of the tumor which is difficult for surgery [1]. Single radiotherapy is recommended for early-stage NPC patients (T1, N0, M0). The incidence of NPC at an advanced stage is around 70% and has a higher risk for local recurrence and distant metastases when treated with radiation alone. The standard therapy for NPC patients with more advanced stages (T1, N1-3 and T2-T4, all N) is concurrent chemoradiation with or without adjuvant chemotherapy (7-9). The lack of radiotherapy devices makes concurrent chemoradiation difficult in Indonesia in general and in particular in Dr. Soetomo General Hospital, Surabaya. Thus, neoadjuvant chemotherapy is the most commonly given treatment option as initial management in patients with NPC [2].

Neoadjuvant chemotherapy is receiving a lot of attention because of its good compliance rate and the effect of early eradication of micrometastases. Recent clinical trials have shown that neoadjuvant chemotherapy before concurrent chemotherapy can significantly improve survival rates, progression-free survival, and distant metastasis-free survival in the management of NPC patients with an advanced locoregional disease [3]. Neoadjuvant chemotherapy regimens are given up to three times at intervals every 3 weeks (10). Another study also reveals that there is a

significant decrease in viral load detected in the plasma of NPC patients following therapy (11).

Recording and data collection of NPC patients in Indonesia is still inadequate and not yet digital, and it is difficult to compare the results of treatment from several centers in Indonesia to other countries and include patients in the chemotherapy protocol in accordance with international recommendations. Adequate data collection for NPC patients is considered important (12). There is no data yet on the management of neoadjuvant chemotherapy in NPC patients at Dr. Soetomo General Hospital, Surabaya. Thus, this research was conducted. The objective of this study was to determine the profile of patients receiving neoadjuvant chemotherapy at Otorhinolaryngology-Head and Neck Surgery (ORL-HNS) Department of Dr. Soetomo General Hospital, Surabaya, Indonesia [4].

METHODS

This study was conducted retrospectively using secondary data derived from medical records of NPC patients treated at the Inpatient Ward, Dr. Soetomo General Hospital, Surabaya from January to December 2018. The study sample was all medical records of NPC patients who had undergone neoadjuvant chemotherapy and met the inclusion and exclusion criteria. The inclusion criteria were NPC patients who had undergone neoadjuvant chemotherapy with complete medical record data. The variables studied were sex, age, stages, histopathology, number of cycles, chemotherapy regimens and changes of regimens. The age group used was a 10-year interval, and the stage used the tumor node metastasis (TNM) classification system according to AJCC 7th edition. Meanwhile, histopathology uses WHO criteria. Data are presented as frequency and percentage and described descriptively.

RESULTS

Increasing Neoadjuvant Chemotherapy in Nasopharyngeal Carcinoma Patients

From January to December 2018, 166 NPC patients underwent neoadjuvant chemotherapy at the Inpatient Ward ORL-HNS Department, Dr. Soetomo General Hospital, Surabaya. The demographic profiles of subjects are presented in Table 1. This study consisted of 127 male patients (76.51%) and 39 female patients (23.49%). The average age of patients was 46.78 years, with the youngest age range of 15 years to the oldest of 75 years old. The age group with the highest incidence of NPC was 41-50 years with 54 patients (32.53%), followed by the 51-60 years and 31-40 years age groups. The 11-20-year age group had the lowest incidence of NPC.

Table 1. Demographic characteristics of subjects

Characteristics	Frequency	Percentage (%)
Sex		
Male	127	76.51
Female	39	23.49
Age		
11 – 20 years	3	1.81
21 – 30 years	15	9.04
31 – 40 years	24	14.46
41 – 50 years	54	32.53
51 – 60 years	51	30.72
61 – 70 years	15	9.04
71 – 80 years	4	2.41

Table 2 shows the clinical characteristic of patients. The majority of patients undergoing neoadjuvant chemotherapy were patients with stage IVA (39.76%), followed by stages IVB (28.31%) and III (16.87%). There was no stage I in this study. Most of NPC patients in this study were found with type III histopathology at 95.18%, followed by type II (3.61%) and type I (1.2%). Most of the NPC patients in this study received 6 cycles of neoadjuvant chemotherapy (39.16%), followed by 3 cycles (19.28%), 5 cycles, and 2 cycles (11.45%).

Table 2. Clinical characteristics of patients

Characteristics	Frequency	Percentage (%)
Stage		
I	0	0
II	17	10.24
III	28	16.87
IVA	66	39.76
IVB	47	28.31
IVC	8	4.82
Histopathology		
Type I WHO	2	1.2
Type II WHO	6	3.61
Type III WHO	158	95.18
Cycles		
1	17	10.24
2	19	11.45
3	32	19.28
4	14	8.43
5	19	11.45
6	65	39.16

Cisplatin-Paclitaxel is the most used chemotherapy regimen in this study (56.28%), followed by Carboplatin-Paclitaxel (30.23%) and 5FU-Cisplatin (7.91%). The Carboplatin-Docetaxel Regimen was the least used in this study as seen in Table 3. A total of 47 patients (28.31%) experienced regimen changes during the neoadjuvant chemotherapy cycle, but most of patients underwent the same regimen from the beginning to the end of the chemotherapy cycle (71.69%).

Table 3. Profile of regimen chemotherapy

Variables	Frequency	Percentage (%)
Regimen		
Cisplatin-Paclitaxel	121	56.28
Carboplatin-Paclitaxel	65	30.23
5FU-Cisplatin	17	7.91
Cisplatin-Docetaxel	5	2.33
5FU-Carboplatin	4	1.86
Carboplatin-Docetaxel	3	1.39
Regimen replacement		
No	119	71.69
Yes	47	28.31

DISCUSSION

Our findings showed that the most NPC patients were men, and most of them were in the age group of 41-50 years. The majority of patients undergoing neoadjuvant chemotherapy were patients with stage IVA and type III histopathology. Most patients underwent 6 cycles of neoadjuvant chemotherapy, and the most widely used chemotherapy regimen was Cisplatin-Paclitaxel. The additional cycles of chemotherapy can be caused by the lack of radiotherapy devices, so patients must undergo additional neoadjuvant chemotherapy regimen while waiting for radiotherapy schedule.

The present study are consistent with study conducted in Guangzhou in 2014 consisting of 3399 men (73.4%) and 1231 women (26.6%) with the most frequent age group being 40-49 years (32.8%) and 50-59 years (25.6%) (13). Another study in 1121 NPC patients consisted of 789 men (70.4%) and 332 women (29.6%) with a peak incidence at the age of 40-49 years and more than 80% of patients diagnosed at the age of 30-59 years (12). This is consistent with reports in some literature stating that the incidence of NPC in men is two to three times higher than women. Differences between men and women may be due to differences in lifestyle (e.g. tobacco consumption) and biological factors (14). The lower incidence of NPC in women may also be influenced by the protective effect of the hormone estrogen (15).

The most age groups of NPC patients in this study were 41-50 years and 51-60 years. These results are following several studies reporting incidents in high-risk populations increased in the age group 40-49 years and 50-59 years (16,17). This is because NPC patients in high-risk populations are exposed to carcinogenic substances in the early stages of life. Nasopharyngeal carcinoma takes several decades to develop malignant cells. Thus, carcinogenic exposure in early life may have a significant effect. In low-risk populations, the incidence of NPC increases consistently with age (13,15).

The majority of patients undergoing neoadjuvant chemotherapy were patients with stage IVA, followed by stages IVB and III. The same results were reported by study in Jakarta in 2012 discovering that people with NPC in Indonesia tended to be diagnosed at an advanced stage (12). These results are slightly different from studies conducted in Guangzhou in 2014 and Seoul in 2015 showing the largest group with stage III, followed by stage IV (7,13,18). Differences in results with research abroad may be due to differences in the level of knowledge, social economy, and community behavior.

Most of NPC patients in this study were found with type III histopathology, followed by type II and type I. This is consistent with research conducted in Jakarta in 2012 (12) and Guangzhou in 2014 (13) showing that type III histopathology was most prevalent in the Southeast Asian

region and other high-risk areas. Types II and III have a higher sensitivity to chemotherapy than type I so that it can be used in therapeutic strategies and prediction of response to treatment. Type III has an incidence of up to 92% in endemic areas and is associated with Epstein Barr virus (EBV) infection in more than 90% of cases. The relationship between EBV infection and low differentiation of squamous cells or glands shows specific differentiation of NPC cells in support of latent EBV infection (19,20).

The majority of NPC patients in this study were given 6 cycles of neoadjuvant chemotherapy. This is not following the recommendations of neoadjuvant chemotherapy regimens in various literature suggesting 3 cycles of chemotherapy at intervals of 3 weeks before being given concurrent chemoradiation. As many as 28.31% of patients experienced a change of regimen during the chemotherapy cycle because, among other things, the previous regimen do not provide a satisfactory response; there are side effects of chemotherapy drugs and impaired kidney function due to cisplatin (8,18).

Cisplatin-Paclitaxel was the most widely used chemotherapy regimen in this study. This is different from the recommendations from some literature using 5FU-Cisplatin as first-line therapy for neoadjuvant chemotherapy (9,21). The choice of the Cisplatin-Paclitaxel regimen as first-line therapy is due to the lack of facilities and infrastructure in the inpatient ward, considering the 5FU-Cisplatin regimen requires a longer inpatient compared to the Cisplatin-Paclitaxel regimen with shorter stays. NCCN recommendations for NPC stage I patients are given definitive radiotherapy in the nasopharynx and elective radiotherapy in the neck area, while the treatment options in stages II-IV are concurrent chemoradiation followed by adjuvant chemotherapy, neoadjuvant chemotherapy followed by concurrent chemoradiation and concurrent chemoradiation. Several chemotherapy drug regimens can be used, including cisplatin, carboplatin, paclitaxel, docetaxel, 5-FU and epirubicin (7).

The overall results of advanced NPC treatment have not been satisfied with a 5-year survival rate of around 53-80% for stage III and 28-61% for stage IV. Several studies have examined neoadjuvant, concurrent, and adjuvant chemotherapy. Clinical trials, meta-analyses, and systematic reviews indicate concurrent chemoradiation to be most effective in the management of NPC. Cisplatin-based chemotherapy together with radiotherapy is now the standard therapy for stage II-IVB NPC (21). However, the lack of facilities and infrastructure at Dr. Soetomo General Hospital, Surabaya, is not yet possible to do concurrent chemoradiation in NPC patients. Management given to NPC patients at Dr. Soetomo General Hospital, Surabaya, is neoadjuvant chemotherapy followed by radiotherapy only and can be followed by adjuvant chemotherapy or radiotherapy administration followed by adjuvant chemotherapy.

The benefits of neoadjuvant chemotherapy before concurrent chemoradiation have been widely studied. Neoadjuvant chemotherapy is believed to be superior to adjuvant chemotherapy in several theoretical aspects: (1) higher compliance to all chemotherapy regimens; (2) chemotherapy drug penetration into tumor tissue may decrease due to decreased circulation after radiotherapy; and (3) neoadjuvant chemotherapy can kill micrometastases before definitive local treatment (18). A meta-analysis study showed that neoadjuvant chemotherapy followed by concurrent chemoradiation or radiotherapy alone can improve overall survival rates and progression-free survival in advanced NPC patients compared to concurrent chemoradiation or radiotherapy alone (22).

The interval between neoadjuvant chemotherapy and radiotherapy also influences treatment outcomes related to overall survival and progression-free survival. Research conducted on 239 NPC patients with advanced locoregional spread found that the shorter the interval between neoadjuvant chemotherapy and radiotherapy, the better the overall prognosis associated with overall survival, failure-free survival, and distant failure-free survival rate (23). Another study involved in 668 patients found that intervals of more than 30 days between neoadjuvant chemotherapy and radiotherapy were associated with a high risk of distant failure and overall survival prognosis, especially for high N category patients (24-28).

NPC patients who received neoadjuvant chemotherapy and concurrent chemoradiation also had an increased risk of locoregional recurrence compared to those who received concurrent chemoradiation and adjuvant chemotherapy. This is caused by the severe side effects of neoadjuvant chemotherapy so that it can delay concurrent chemoradiation. The results of a meta-analysis showed that neoadjuvant chemotherapy is associated with an increased risk of hematological side effects, including leukopenia and thrombocytopenia. These acute side effects can be treated by giving growth factors (12).

CONCLUSION

Nasopharyngeal carcinoma was more common in men and the age group of 41-50 years. The majority of patients undergoing neoadjuvant chemotherapy were patients with stage IVA and type III histopathology. Most patients received 6 cycles of neoadjuvant chemotherapy, and Cisplatin-Paclitaxel was the most widely used chemotherapy regimen. The lack of radiotherapy devices causes concurrent chemoradiation to not be given widely to nasopharyngeal carcinoma patients and increases the number of neoadjuvant chemotherapy cycles while waiting for the radiotherapy schedule.

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