



# Source details

## Annals of Medicine and Surgery

Scopus coverage years: from 2012 to 2022

Publisher: Elsevier

E-ISSN: 2049-0801

Subject area: Medicine: Surgery

Source type: Journal

[View all documents >](#)

[Set document alert](#)

[Save to source list](#) [Source Homepage](#)

CiteScore 2021  
**1.4**



SJR 2021  
**0.373**



SNIP 2021  
**0.965**



[CiteScore](#) [CiteScore rank & trend](#) [Scopus content coverage](#)

**i** Improved CiteScore methodology ✕

CiteScore 2021 counts the citations received in 2018-2021 to articles, reviews, conference papers, book chapters and data papers published in 2018-2021, and divides this by the number of publications published in 2018-2021. [Learn more >](#)

CiteScore 2021 ▼

$$1.4 = \frac{2,710 \text{ Citations 2018 - 2021}}{1,918 \text{ Documents 2018 - 2021}}$$

Calculated on 05 May, 2022

CiteScoreTracker 2022 ⓘ

$$1.6 = \frac{5,234 \text{ Citations to date}}{3,326 \text{ Documents to date}}$$

Last updated on 05 January, 2023 • Updated monthly

### CiteScore rank 2021 ⓘ

Category	Rank	Percentile
Medicine		
Surgery	#266/469	43rd

[View CiteScore methodology >](#) [CiteScore FAQ >](#) [Add CiteScore to your site](#)

---

## About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

## Language

[日本語版を表示する](#)

[查看简体中文版本](#)

[查看繁體中文版本](#)

[Просмотр версии на русском языке](#)

## Customer Service

[Help](#)

[Tutorials](#)

[Contact us](#)

---

## ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

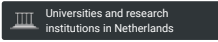
Copyright © Elsevier B.V. ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies ↗.






## Annals of Medicine and Surgery

<p><b>COUNTRY</b></p> <p>Netherlands</p> 	<p><b>SUBJECT AREA AND CATEGORY</b></p> <p>Medicine</p> <ul style="list-style-type: none"> <li>Medicine (miscellaneous)</li> <li>Surgery</li> </ul>	<p><b>PUBLISHER</b></p> <p>Elsevier BV</p>	<p><b>H-INDEX</b></p> <p><b>30</b></p>
<p><b>PUBLICATION TYPE</b></p> <p>Journals</p>	<p><b>ISSN</b></p> <p>20490801</p>	<p><b>COVERAGE</b></p> <p>2012-2021</p>	<p><b>INFORMATION</b></p> <p><a href="#">Homepage</a></p> <p><a href="#">How to publish in this journal</a></p> <p><a href="mailto:annalsjournal@elsevier.com">annalsjournal@elsevier.com</a></p>

### SCOPE

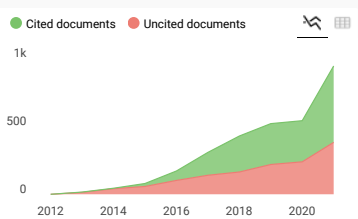
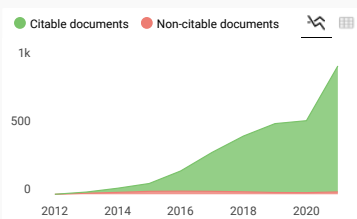
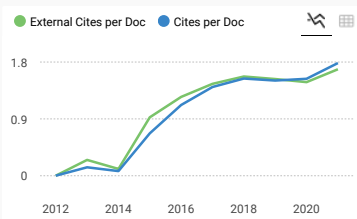
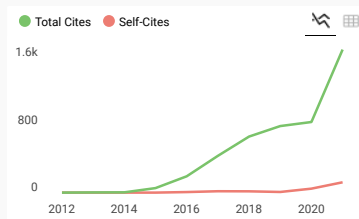
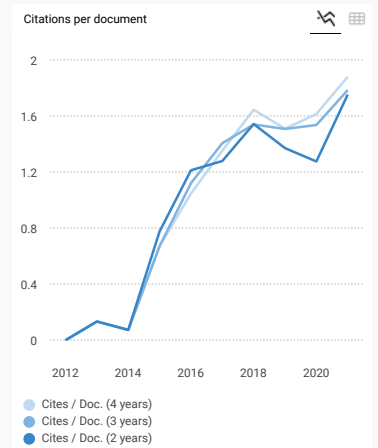
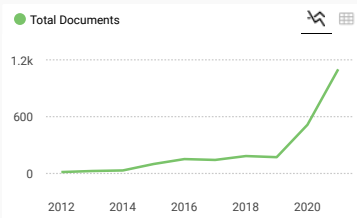
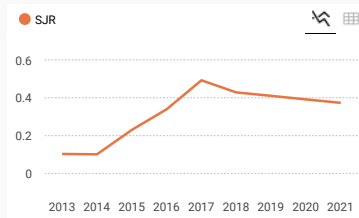
Annals of Medicine and Surgery is an online-only, peer-reviewed open access journal with a global outlook and focus on those training in medicine and surgery (postgraduate and undergraduate). AMS contains a mix of original clinical and basic science research, reviews, editorials, commentary, perspectives, debate, opinion, case reports and journal club reports. The journal crosses the whole disease spectrum of medicine and surgery but does also have a special focus on the following areas: -Patient safety- Human factors, teamwork, communication and professionalism- Quality improvement science and practice- Evidence based medicine- Implementation science – clinical evidence into practice- Leadership and management- Medical education, teaching, and training- Public and global health- Healthcare policy, delivery, commissioning, and resource management- Use of technology and health informatics- Clinical ethics and medical law- Research and innovation – bedside to bench and back again – including applications like personalised medicine.

 Join the conversation about this journal

FIND SIMILAR JOURNALS ?

options

<p>1 <b>International Journal of Surgery</b> NLD</p> <p><b>80%</b> similarity</p>	<p>2 <b>International Journal of Surgery Open</b> GBR</p> <p><b>73%</b> similarity</p>	<p>3 <b>International Journal of Surgery Case Reports</b> NLD</p> <p><b>67%</b> similarity</p>	<p>4 <b>BMC Surgery</b> GBR</p> <p><b>61%</b> similarity</p>	<p>5 <b>Acta Chirurgica Belgica</b> GBR</p> <p><b>59%</b> similarity</p>
---	--	--	--	--



Annals of Medicine and Surgery

Q3  
Medicine (miscellaneous)  
best quartile

SJR 2021  
0.37

powered by scimagojr.com

Show this widget in your own website

Just copy the code below and paste within your html code:

<a href="https://www.scimagojr.com">

SCImago Graphica

Explore, visually communicate and make sense of data with our **new data visualization tool.**

Metrics based on Scopus® data as of April 2022



**Khalid** 1 year ago

Would you inform me what is the impact factor of this journal please?

← reply



**Melanie Ortiz** 1 year ago

SCImago Team

Dear Khalid, thank you very much for your comment. SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR (Check it on our website). We suggest you consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team



**Sultan jarrar** 2 years ago

Dear SCIMAGO team,

Could you please tell me if this journal considered to be q2 or q3 ? There is a little confusion about it .

Kind regards

← reply



**AHMED ABO ZAID AHMED TEIMA** 2 months ago

please the last quartile of journal Q2 OR Q3  
THE MAIN ESPACIALITY IS MEDICINE OR SURGERY  
THANK YOU



**Melanie Ortiz** 2 months ago

SCImago Team

Dear Ahmed, thank you very much for your request. You can consult that information just above. Best Regards, SCImago Team



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Sultan,  
thank you for contacting us. For every journal, the annual value of the SJR is integrated into the distribution of SJR values of all the subject categories to which the journal belongs. There are more than 300 subject categories. The position of each journal is different in any category and depends on the performance of the category, in general, and the journal, in particular .  
Best Regards, SCImago Team



**Anton** 3 years ago

Dear sir/ madam, please tell if the journal status Q2 or Q3?

← reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Anton, thank you for contacting us. For every journal, the annual value of the SJR is integrated into the distribution of SJR values of all the thematic categories to which the journal belongs. There are more than 300 thematic categories. The position of each journal is different in any category and depends on the performance of the category, in general, and the journal, in particular. The next SJCR's update will be made throughout June 2020. Best Regards, SCImago Team



**Saad** 3 years ago

Dear. Melanie  
Thank you very much for your reply.  
Best regards.  
Saad

← reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Saad, thanks for your participation! Best Regards, SCImago Team



**Saad** 3 years ago

Dear.  
I want ask about annals of medicine and surgery journal. Is it Q2 or Q3 according to 2019.  
Thank you.  
Best regards.

← reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Saad,  
Thank you for contacting us. Our data come from Scopus, they annually send us an update of the data. This update is send to us around April / May every year. Thus, the indicators for 2019 will be available in June 2020 and before that we can't know what will happen with this journal. Best Regards, SCImago Team

#### Leave a comment

Name

Email

(will not be published)

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

Developed by:



Powered by:



Follow us on [@ScimagoJR](#)

Scimago Lab, Copyright 2007-2022. Data Source: Scopus®

EST MODUS IN REBUS  
Herodotus (Salting 1, 1-104)

[Edit Cookie Consent](#)



## Volume 79

July 2022

[< Previous vol/issue](#)

[Next vol/issue >](#)

Receive an update when the latest issues in this journal are published

 [Sign in to set up alerts](#)

● [Open access](#)

[Editorial Board](#)

[Article 104160](#)

[📄 Download PDF](#)

*Original Research*

Research article ● [Open access](#)



Documentation of neurovascular assessment in fracture patients in a tertiary care hospital: A retrospective review

[FEEDBACK](#) 



center prospective observational study

Zewdu Minda, Hirbo Samuel, Senayit Aweke, Getachew Mekete, ... Denberu Eshetie  
Article 103936

 [Download PDF](#)   Article preview 

Research article ● *Open access*

Qualitative healthcare worker survey: Retrospective cross-sectional case study on  
COVID-19 in the African context


Allison Benjamin, Amir Sultan, Mirghani Yousif, Abdelmajeed Moussa, ... Jose Daniel Debes  
Article 103918

 [Download PDF](#)   Article preview 

Research article ● *Open access*

Impact of the COVID-19 pandemic on the volume of chronic suppurative otitis media  
surgeries


Lina Lasminingrum, Sally Mahdiani, Arif Dermawan, Muthiah Miftahul Husnayain  
Article 103921

 [Download PDF](#)   Article preview 

Research article ● *Open access*

Clinical profile and biochemical abnormalities in brucellosis: A cross-sectional study

Sanjeeb Shrestha, Mitesh Karn, Sanjib Mani Regmi, Amar Nagila, Sandip Pahari  
Article 103922

 [Download PDF](#)   Article preview 



Research article ● *Open access*

Biofeedback therapy for anorectal functional disorder: Malaysian colorectal tertiary centre  
experience

Saidah Sahid, Muhd Yusairi Bin Kamarulzaman, Johari Bin Mustafa, Nik Amin Sahid, N...

cohort


Uri Gabbay, Assaf Issachar, Michal Cohen-Naftaly, Marius Brown, Eviatar Nesher  
Article 103933

 [Download PDF](#)    Article preview 

Research article ● *Open access*

Association between thrombocytopenia and the severity of Covid-19 infection among hospitalized Egyptian patients

Mohsen M. El-Khaiat, Ayman M. El-lehlah, Manal A. Kesheita, Mohamed Abdel-Samiee, Ahmed Abozaid  
Ahmed Teima  
Article 103973

 [Download PDF](#)    Article preview 

Research article ● *Open access*

Analgesic efficacy of ultrasound-guided transversus abdominis plane block and lateral approach quadratus lumborum block after laparoscopic appendectomy: A randomized controlled trial

Gokhan Sertcakacilar, Gunes Ozlem Yildiz  
Article 104002

 [Download PDF](#)    Article preview 

Research article ● *Open access*

A male's foot is being shot by an ulcer, not a gunshot! The magnitude and associated factors of diabetic foot ulcer among diabetes mellitus patients on chronic care follow-up of southwestern Ethiopian hospital: A cross-sectional study

Firomsa Bekele, Fuad Kelifa, Birbirs Sefera  
Article 104003

 [Download PDF](#)    Article preview 

Research article ● *Open access*

Research article  Open access

## Pediatric living donor liver transplantation (LDLT): Short- and long-term outcomes during sixteen years period at a single centre- A retrospective cohort study

Emad Hamdy Gad, Ahmed Nabil Sallam, Hosam Soliman, Tarek Ibrahim, ... Islam Ayoub  
Article 103938

 [Download PDF](#)    Article preview 

Research article  Open access

## Outcome of Whipple's procedure for Groove pancreatitis: A retrospective cross-sectional study



Arkadeep Dhali, Sukanta Ray, Ranajoy Ghosh, Debashis Misra, Gopal Krishna Dhali  
Article 104008

 [Download PDF](#)    Article preview 

Research article  Open access

## Measuring quality in colorectal cancer surgery in low- and middle-income countries: The Clavien-Dindo classification in a Sri Lankan cohort



S. Lindholm, S. Lindskogen, B. Gamage, G. Kurlberg, D. Ljungman  
Article 104018

 [Download PDF](#)    Article preview 

Research article  Open access

## Evaluation of the pain scale during arteriovenous fistula puncture with and without lidocaine gel 2% in patients undergoing haemodialysis in Kosovo

Rudhani Ibrahim, Morina Naim, Rashiti Premtim  
Article 103913

 [Download PDF](#)    Article preview 

Research article  Open access

Research article ● Open access

## Impacts of severity of Covid-19 infection on the morbidity and mortality of surgical patients



Amer Al Ani, Rafeef Tahtamoni, Yara Mohammad, Fawzi Al-Ayoubi, ... Ammar Al-Mashhadi  
Article 103910

 [Download PDF](#)   Article preview 

Research article ● Open access

## In-hospital mortality in SARS-CoV-2 stratified by sex differences: A retrospective cross-sectional cohort study


Mohammed Al-Jarallah, Rajesh Rajan, Raja Dashti, Ahmad Al Saber, ... Kobalava D. Zhanna  
Article 104026

 [Download PDF](#)   Article preview 

Research article ● Open access

## Keratoconus detected by corneal topography in patients seeking refractive surgery in Jazan region, Saudi Arabia: A retrospective cross-sectional study

Ismail Abuallut, Ahmed Ageeli, Mohammed Shami, Mohammed Bosaily, ... Walid Barakat  
Article 103790

 [Download PDF](#)   Article preview 

Research article ● Open access

## Penile fracture: An analysis of 9 cases in a tertiary hospital

Maher Al-Hajjaj, Ali Alali Aljool, Hasan Al Husein  
Article 104028


 [Download PDF](#)   Article preview 

Research article ● Open access

Research article  Open access

## Incidence of eye complications among sickle cell disease patients in Jeddah, Saudi Arabia: A cross-sectional study


Eid Ayed Almasoudi, Sultan Fahad Magliah, Abubakr Salem Alzweihri, Abdullah Omar Aljuwaybiri, Abdullah Saleh Alqahtani  
Article 103999

 [Download PDF](#)    Article preview 

Research article  Open access

## Assessment of postoperative patient handover practice and safety at post anesthesia care unit of Dilla University Referral Hospital, Ethiopia: A cross-sectional study

Abebayehu Zemedkun, Belete Destaw, Seyoum Hailu, Mesay Milkias, ... Dugo Angasa  
Article 103915

 [Download PDF](#)    Article preview 

Research article  Open access

## Indications and complications for surgical management of thyroid diseases: A single center experience


Khalid A. Alyahya, Abdullah A. Alarfaj, Abdulwahab A. Alyahya, Abdulrahman E. Alnaim  
Article 103980

 [Download PDF](#)    Article preview 

Research article  Open access

## The basic anatomy of the medial sural artery perforator flaps in Vietnamese adults

Khoa Xuan Ngo, Huy Tien Vo, Duong Thai-Ha Nguyen, Ha Thi-Ngoc Doan  
Article 103996

 [Download PDF](#)    Article preview 

Research article  Open access

Research article  Open access

Forensic aspects of trauma to the male external genitalia (TMEG), analysis of a series of 84 cases


A. Kbirou, I. Jandou, M. Sayah, H. Benhadda, ... R. Aboutaieb  
Article 103916

 [Download PDF](#)    Article preview 

Research article  Open access

The effect of intrauterine hCG injection before embryo transfer on pregnancy rate in frozen embryo transfer cycles

Moghadaseh Jahanshahi, Ashraf Aleyasin, Marzieh Aghahosseini, Aida Najafian, ... Sedigheh Hosseinimousa  
Article 104091

 [Download PDF](#)    Article preview 

Research article  Open access

Follicular fluid PlGF and IVF/ICSI outcomes among PCOS and normo-ovulatory women using different controlled hyperstimulation protocols: A prospective case-control study



Sally Kadoura, Marwan Alhalabi, Abdul Hakim Nattouf  
Article 104096

 [Download PDF](#)    Article preview 

Research article  Open access

What are the determinants of parametrial invasion in patients with early stage cervical cancer: A cross sectional study

Niloufar Hoorshad, Narges Zamani, Shahrzad Sheikh Hasani, Amirhossein Poopak, Amirsina Sharifi  
Article 104020

 [Download PDF](#)    Article preview 

Research article ● Open access

## The role of focused assessment sonography for trauma (FAST) on the outcomes in patients with blunt abdominal trauma following non-operative therapy: A cohort study

Dewi Sukorini Wahyuningtias, Aditya Rifqi Fauzi, Eko Purnomo, Imam Sofi

Article 104086


 [Download PDF](#)    Article preview 

Research article ● Open access

## Prevalence of obesity and its association with fast-food consumption and physical activity: A cross-sectional study and review of medical students' obesity rate

Moustafa Alhashemi, Wafik Mayo, Mohammed Moutaz Alshaghel, Muhamad Zakaria Brimo Alsaman, Luma Haj Kassem

Article 104007

 [Download PDF](#)    Article preview 

Research article ● Open access

## One anastomosis gastric bypass surgery in Type2 diabetes patients with body mass index < 35 kg/m<sup>2</sup>: A multi-center retrospective cohort study

Alireza Amirbeigi, Fereshteh Abbaslou, Mohammad Talebpour, Ahmadreza Soroush, ... Khosrow Najjari

Article 104102

 [Download PDF](#)    Article preview 

Research article ● Open access

## Terminal digit preference and the accuracy of breast cancer diameter reporting based on Benford's law

Shahzaib Ahmad, Amber Latif, Mehwish Mehmood, Ramisha Aslam, ... Waheeda Begum

Article 103993

 [Download PDF](#)    Article preview 

Research article ● Open access

## Functional outcomes of surgical treatment of ureteral injury following gynecological and obstetrical surgery

Moez Rahoui, Yassine Ouanes, Kays Chaker, Kheireddine Mourad Dali, ... Yassine Nourira

Article 104067


 [Download PDF](#)   Article preview 

Research article ● Open access

## Factors influencing the length of stay in the moroccan intensive care unit in patients surviving critical COVID-19 infection

Hamza mimouni, Amine Bouchlarhem, Amine Lafkih, Leila Haddar, ... Brahim Housni

Article 104108



 [Download PDF](#)   Article preview 

Research article ● Open access

## Heparin for patients with coronavirus disease 2019 and hypercoagulation complications: A cohort study

Muhammad Fachri, Mochammad Hatta, Sefia Nabila Nur Azmi Tarigan, Risky Akaputra, ... Andini Febrianty

Article 104042

 [Download PDF](#)   Article preview 

Research article ● Open access

## Stroke incidence between stenting and endarterectomy for asymptomatic carotid artery stenosis

Ahmed Abdel Rahim, Mahmoud Ahmed Thabet, Ali Mahmoud Galal, Mohamed Ibrahim Hammada,

Devender Mittapalli

Article 104083



 [Download PDF](#)   Article preview 



Research article ● Open access

## Acute Progressive retro-peritoneal hematoma in COVID19 patients with sub cutaneous ecchymosis




Ebrahim Khalighi, Saeid Marzban-Rad, Hamid Reza Taheri  
Article 104107

 Download PDF  Article preview 

Research article ● Open access

## The factors associated with under-five mortality in Ethiopia




Getahun Dejene Yemane  
Article 104063

 Download PDF  Article preview 

Research article ● Open access

## *Trans*-gastric and *trans*-abdominal percutaneous drainage of acute peripancreatic fluid infected collections: A retrospective analysis

Carlos Rey, Danny Conde, Felipe Girón, Daniela Ayala, ... Marco Quintero  
Article 104080

 Download PDF  Article preview 

Research article ● Open access

## Comparison of modified mallampati classification with Cormack and Lehane grading in predicting difficult laryngoscopy among elective surgical patients who took general anesthesia in Werabie comprehensive specialized hospital - Cross sectional study. Ethiopia, 2021

Dessalegn Yemam, Eyayalem Melese, Zewetir Ashebir  
Article 103912

 Download PDF  Article preview 

Research article  Open access

## Assessment of perioperative anesthesia record sheet completeness: A multi-center observational study

Moges Gelaw Taye, Efrem Fenta, Tadese Tamire, Yewlsew Fentie

Article 104103


 [Download PDF](#) Article preview 

Research article  Open access

## Patients' satisfaction and associated factors towards preoperative informed consent process: A cross-sectional study

Tamiru Tilahun Ayele, Tadese Tamire Negash, Keder Essa oumer, Aderajew Mekuanint, ... Ashenafi Tolosa

Article 104104



 [Download PDF](#) Article preview 

Research article  Open access

## Patient satisfaction with post-operative pain management and associated factors among surgical patients at Tikur Anbessa Specialized Hospital: Cross-sectional study

Bekele Buli, Amanu Gashaw, Geresu Gebeyehu, Meron Abrar, Bayisa Gerbessa

Article 104087


 [Download PDF](#) Article preview 

Research article  Open access

## The effect of cardiac rehabilitation on left and right ventricular function in post primary PCI patients

Mahdi Zahedi, Mehrdad Shirmohammadi

Article 104093

 [Download PDF](#) Article preview 

Research article  Open access

Research article ● Open access

## Evaluating patients' satisfaction level after using 3D printed PEEK facial implants in repairing maxillofacial deformities

Ahmad Fayez Ahmad, Hekmat Yaakob, Ali Khalil, Pierre Georges

Article 104095

 [Download PDF](#)   Article preview 

### Review Articles

---

Review article ● Open access

## The association between SARS-CoV-2 vaccines and transverse myelitis: A review

Fatima Naz Naeem, Syeda Fatima Saba Hasan, Muskaan Doulat Ram, Summaiyya Waseem, ... Taha Gul Shaikh

Article 103870

 [Download PDF](#)   Article preview 

Review article ● Open access

## DOACs or VKAs or LMWH – What is the optimal regimen for cancer-associated venous thromboembolism? A systematic review and meta-analysis

Naser Yamani, Samuel Unzek, Talal Almas, Adeena Musheer, ... Farouk Mookadam

Article 103925

 [Download PDF](#)   Article preview 

Review article ● Open access



## A review on double tract reconstruction after proximal gastrectomy for proximal gastric cancer

Tricia S. Lewis, YongDong Feng

Article 103879

 [Download PDF](#)   Article preview 

Article 103887



 [Download PDF](#)   Article preview 

Review article ● *Open access*

## A review of NTRK fusions in cancer

Cristina Alexandra Manea, Dumitru Cristinel Badiu, Ioan Cristian Ploscaru, Anca Zgura, ... Vladimir Botnarciuc

Article 103893



 [Download PDF](#)   Article preview 

Review article ● *Open access*

## Aggressive angiomayxoma in men: Case report and systematic review

Aziz Joseph Sabbagh, Khaled Arnaout, Ahmad Yamen Arnaout, Bayan Toutounji, ... Ibrahim Al-Hadid

Article 103880



 [Download PDF](#)   Article preview 

Review article ● *Open access*

## The pelvic area — A central hypogastric area for abdominal palpation for women with abdominal pain: A narrative review

Ming Cheh Ou, Dennis Ou, Chung Chu Pang

Article 104000


 [Download PDF](#)   Article preview 

Review article ● *Open access*

## Does individualized guided selection of antiplatelet therapy improve outcomes after percutaneous coronary intervention? A systematic review and meta-analysis

Naser Yamani, Samuel Unzek, Muhammad Hasnain Mankani, Talal Almas, ... Farouk Mookadam

Article 103964

 [Download PDF](#)   Article preview 

Review article  Open access

## Comparative overview of emerging RNA viruses: Epidemiology, pathogenesis, diagnosis and current treatment

Ishani Chakrabartty, Maryam Khan, Saurov Mahanta, Hitesh Chopra, ... Talha Bin Emran

Article 103985


 [Download PDF](#)   Article preview 

Review article  Open access

## The outbreak of monkeypox 2022: An overview

Munawar Hraib, Sarah Jouni, Mhd Mustafa Albitar, Sara Alaidi, Zuheir Alshehabi

Article 104069



 [Download PDF](#)   Article preview 

Review article  Open access

## Samidorphan/olanzapine combination therapy for schizophrenia: Efficacy, tolerance and adverse outcomes of regimen, evidence-based review of clinical trials

Syeda Tayyaba Rehan, Abdul Hannan Siddiqui, Zayeema Khan, Laiba Imran, ... Ali Ahmed

Article 104115

 [Download PDF](#)   Article preview 

### Case Reports

---

Case report  Open access

## Treatment of thigh abscess caused by retroperitoneal perforation of cecal cancer: A case report

Shunki Iemura, Shigeshi Mori, Masato Kamiya, Kenji Yamazaki, ... Daisuke Togawa

Article 103882

 [Download PDF](#)   Article preview 

Case report ● *Open access*

## Forgotten guidewire: A case report

Paulo Inácio Alves Ramos Diniz, Juan Eduardo Rios Rodriguez, João Pedro Salgado Pio Oliveira, Mirella Cruz Lira, ... Leonardo Pessoa Cavalcante

Article 103867


 [Download PDF](#)    Article preview 

Case report ● *Open access*

## An inguinal hernia revealing an advanced stage gastric cancer in a young patient: A case report

Muhamad Zakaria Brimo Alsaman, Lina ghabreau, Zainab Zeino, Ziad Alahmad, ... Mazen Mohammad

Article 103974

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## An unusual cause of painful ejaculation in a young patient: Zinner syndrome

Moez Rahoui, Yassine Ouanes, Kays Chaker, Mokhtar Bibi, ... Yassine Nouira

Article 103982



 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Transverse pinning of concomitant first and second metatarsal fractures using 1.5mm K-wires; case report and technical note

Alireza Moharrami, Seyed Peyman Mirghaderi, Nima Hoseini Zare, Seyed Pouya Tabatabaei Irani, ... Seyed Hadi Kalantar

Article 103906



 [Download PDF](#)    Article preview 

Case report ● *Open access*

Case report  *Open access*

## Successful medical management of diabetic ketoacidosis at first presentation in a child with type 1 diabetes: A case report

Shriya Sharma, Aakriti Adhikari, Samikshya Adhikari, Sabin Poudel, ... Sumit Kumar Yadav  
Article 103981

 [Download PDF](#)    Article preview 

Case report  *Open access*

## A case of McKusick–Kaufman syndrome with perinatal diagnosis: Case report and literature review

Irfan Ullah, Shahzad Rauf, Sajjad Ali, Kiran Shafiq Khan, ... Muhammad Sohaib Asghar  
Article 103926

 [Download PDF](#)    Article preview 

Case report  *Open access*

## Littoral Cell Angioma of Spleen: A rare case report



Laila Bouzayan, Jabi Rachid, Mohamed Yassine Mabrouk, Ayoub Madani, ... Mohammed Bouziane  
Article 103904

 [Download PDF](#)    Article preview 

Case report  *Open access*

## Primary dural lymphoma: Case report


Jihane Saidy, Abderrazzak Bertal, Saad Hmada, Nidal Aamara, ... Abdelhakim Lakhdar  
Article 103984

 [Download PDF](#)    Article preview 

Case report  *Open access*

## Therapeutic actions in a 2-month-old child with teratoma and duodenal malrotation accompaniment



Daniel Paramythiotis, Angeliki Sevasti Kollatou, Theodora Simou, Eleni Karlafti, ... Antonios Michalopoulos  
Article 104005

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Surgical management of ancient retroperitoneal schwannoma


Abdelhakim Harouachi, Nabil Khomsi, Houssam Aabdi, Nada Akouh, ... Badr Serji  
Article 103934

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Intrathyroidal parathyroid carcinoma presenting as thyroid nodule: Case report of unusual location


Anajar Said, Allaoui Abire, Laidi Soukaina, Alatawna Hind, ... Benariba Fouad  
Article 103994

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Spontaneous rupture of renal angiomyolipoma and its management: A case report

Narayan Thapa, Suman Maharjan, Anil Hona, Jayaram Pandey, Sabin Karki  
Article 104037

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Pneumaturia and faecaluria: Symptoms leading to a life-saving diagnosis

Aye Aye Wynn, Khine San Yin, Nang Khin Mya, Nornazirah Azizan, ... Firdaus Hayati  
Article 103967



 [Download PDF](#)    Article preview 



Case report ● Open access

## Clear cell carcinoma of the abdominal wall: A case report with a review of the literature




Ahlem Bellalah, Bahaeddine Lahbecha, Olfa Zokar, Mossaab Ghannouchi, ... Abdelfatteh Zakhama  
Article 104038

 Download PDF  Article preview 

Case report ● Open access

## Complete resolution of otogenic cerebellar abscess with conservative approach: Two case reports

Riva Satya Radiansyah, Paulus Sugianto, Cindy Cecilia  
Article 104001

 Download PDF  Article preview 

Case report ● Open access

## Spontaneous transvaginal small bowel evisceration secondary to vaginal cuff dehiscence after abdominal hysterectomy: A case report

Najib Mohamed Salad, Abdikarim Ali Omar, Yahye Garad Mohamed  
Article 103986

 Download PDF  Article preview 

Case report ● Open access

## Management of unusual missed diagnosis of a Intra-orbital wooden foreign body: A case report and review of literature

Kamal Pandit, Sanjeeta Sitaula, Gulshan Bahadur Shrestha, Sagun Narayan Joshi, Meenu Chaudhary  
Article 104017

 Download PDF  Article preview 

Case report ● Open access

Case report ● *Open access*

## Giant cyst-like cortical tubers in an adult with tuberous sclerosis presenting as spastic tetraplegia

Habib Ahmad Esmat

Article 104024



 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Aplastic anemia induced by human parvovirus B19 infection in an immunocompetent adult male without prior hematological disorders: A case report

Ayush Mohan Bhattarai, Bishal Dhakal, Pooja Rokaya, Abinash Karki, ... Smarika Baral

Article 103998

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## A rare case report of an adult with down syndrome and gallbladder cancer

Kaouthar Rais, Najoua El moutaoukil, Oumayma El eulj, Abdelkrim Zazour, ... My Zahi Ismaili

Article 104025

 [Download PDF](#)    Article preview 

Case report ● *Open access*

## Tapia's syndrome in post-operative patient following orotracheal intubation

Sandhya kiran Neupane, Prakash Poudel Jaishi, Aakash Acharya, Prabhat Kiran Neupane, ... Kusum Joshi

Article 104043

 [Download PDF](#)    Article preview 

Case report ● *Open access*

Case report ● *Open access*

## Unusual association between testicular tuberculosis and microdeletion of the Y chromosome in an infertile patient with azoospermia



Moez Rahoui, Yassine Ouanes, Kays Chaker, Mokhtar Bibi, ... Yassine Nouira  
Article 104068

 [Download PDF](#)   Article preview 

Case report ● *Open access*

## When your lungs get cleaned by Harpic: A case report

Abhishek Sharma, Aavash Mishra, Sampada Shrestha, Anand Mishra, ... Dharana Gelal  
Article 104041

 [Download PDF](#)   Article preview 

Case report ● *Open access*

## A case report of spindle cell lipoma

Rema AlRashed, Abdullah Albdah, Feras Alsannaa  
Article 103960

 [Download PDF](#)   Article preview 

Case report ● *Open access*

## Ruptured interstitial ectopic pregnancy: A case report and review of the literature

Sarah Boujida, Oumaima M'hamdi, Hounaida Mahfoud, Aziz Baydada, Aicha Kharbach  
Article 104076

 [Download PDF](#)   Article preview 

Case report ● *Open access*

## A case report of secondary spontaneous pneumothorax in acute exacerbation of COPD managed with improvised chest tube drain

Submit your article [↗](#)

☰ Menu



preoperative indocyanine green injection using stereotactic mammography: A case report

Atsushi Muraoka, Masahiko Kobayashi

Article 103965

[↓ Download PDF](#)   Article preview [✓](#)

Case report ● *Open access*

Osteoarthritis in a fifty-year-old patient with unfused skeleton due to undiagnosed coexisting cleidocranial and spondyloepiphyseal dysplasia – Case report

Dr Mahum Zaidi, Sareema Eman Akhtar, Saad Shakil, Dr Muhammad Wasif, ... Tushar Thakur

Article 104066

[↓ Download PDF](#)   Article preview [✓](#)





# Annals of Medicine and Surgery

## Editorial Board

### Editor-in-Chief

Riaz Agha, London, England, UK

### Assistant Managing and Executive Editor

Maliha Agha, London, England, UK

### Assistant Editors

Adam Frampton, London, England, UK  
Jorg Kleef, Munich, Germany  
Deepthi Mani, Washington, USA  
David Rosin, Bridgetown, Barbados  
Peter Schemmer, Heidelberg, Germany

### Social Media Editor

Riaz Agha, London, UK

### Managing Editor

Alexander James Fowler, London, England, UK

### Statistical Editor

Lai-Chu See, Taoyuan, Taiwan

### Associate Staff Editors

Sergio Acuna, Toronto, Canada  
Guido Alsfasser, Rostock, Germany  
Fernando Angarita, Toronto, Canada  
James Clark, Plymouth, England, UK  
Terry Evans, London, England, UK  
Shivani Garg, Wisconsin, USA  
Todd Golden, Arizona, USA  
Fermin Guerrero Del Angel, Madero, Mexico  
Eleni Ntouvali, Athens, Greece

### Assistant Commissioning Editors

---

Ahmed Al-Jabir, London, UK  
Zaid Alsafi, London, UK  
Thomas Franchi, Sheffield, UK  
Christos Iosifides, London, UK  
Ahmed Kerwan, London, UK

Mehdi Khan, London, UK  
Ginimol Mathew, London, UK  
Maria Nicola, London, UK  
Niamh O'Neill, London, UK  
Catrin Sohrabi, London, UK

### Junior Staff Editors

---

Sumita Agrawal, Jodhpur, India  
Bakir Al-Dulaimy, London, UK  
Mohammed Anwar, London, UK  
Martinique Vella Baldacchino, Glasgow, UK  
Maria Borrelli, London, UK  
Kerry Anne Burke, Manchester, England, UK  
Adam Cristaudo, Cairns, Australia  
Buket Gundogan, London, UK  
Adam Gwozdz, London, England, UK

Mike Hu, California, USA  
Tobin Joseph, London, UK  
Kiron Koshy, London, UK  
Seon-Young Lee, Southampton, England, UK  
Chris Limb, London, England, UK  
Yasser Al Omran, London, England, UK  
Karishma Shah, Oxford, UK  
Rachel Thavayogan, London, UK

### Executive Committee

---

Sir Graeme Catto, Aberdeen, Scotland, UK  
Sir Barry Jackson, London, England, UK

David Rosin, Bridgetown, Barbados

### Editorial Board

---

Xiao-Ping Chen, Wuhan, China  
Marc Cohen, Victoria, Australia  
David Green, London, England, UK  
Saeed Sadiq Hamid, Karachi, Pakistan  
Peter Hutchinson, Cambridge, England, UK  
Peter Littlejohns, London, England, UK  
Ashok Mahapatra, New Delhi, India  
Judy McKimm, Swansea, Wales, UK  
Dattatraya Muzumdar, Mumbai, India

Ashish Nabar, Mumbai, India  
Fabio Nicoli, London, UK  
John Norcini, Philadelphia, PA, USA  
Christoph Paasch, Berlin, Germany  
Daniel Sokol, London, England, UK  
Jamsheer Talati, Karachi, Pakistan  
John V. Thomas, Birmingham, AL, USA  
Tim Gabe Williams, Kent, England, UK  
Zhao-Fan Xia, Shanghai, China

## Elsevier

---

**Executive Publisher**

Allan Ross, New York, USA

**Administrative Editor**

Joanne Frankland, Oxford, UK

**Marketing Manager**

Wendy Montalvo, New York, USA

**Journal Manager**

Tamsyn Hopkins, Exeter, UK

**Senior Business Development**

**Executive (Reprints)**

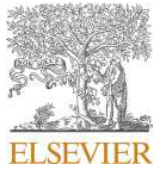
Emma Steel, London, UK

**Advertising Sales Manager**

Robert Bayliss, London, UK

**Account Manager (Supplements)**

Evelina Euren, The Netherlands



Contents lists available at ScienceDirect

## Annals of Medicine and Surgery

journal homepage: [www.elsevier.com/locate/amsu](http://www.elsevier.com/locate/amsu)

## Case Report

## Complete resolution of otogenic cerebellar abscess with conservative approach: Two case reports

Riva Satya Radiansyah, Paulus Sugianto<sup>\*</sup>, Cindy Cecilia

Department of Neurology, Faculty of Medicine, Universitas Airlangga – Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

## ARTICLE INFO

## Keywords:

Cerebellar abscess  
Conservative management  
Otitis media

## ABSTRACT

**Background:** Cerebellar abscess is rare, and these two case reports are examined to consider alternative therapy. **Case presentation:** We present two cases of patients with cerebellar abscess. In both cases, patients had the same initial symptoms of fever and central vertigo, with otitis media as the source of infection. However, one patient had generalized onset of tonic-clonic seizure. Both patients were given the same regimen of antibiotics for six weeks and then, evaluated on a clinical and radiological basis via computed tomography (CT) and magnetic resonance imaging (MRI). Six weeks after treatment was initiated, No. abscesses were detected in either patient; clinically, there were no complaints or neurological deficits.

**Discussion:** There are several therapeutic management options in cases of cerebellar abscess. With conservative management (e.g., administering symptomatic drugs and antibiotics), patients can recover completely.

**Conclusion:** Management of patients with cerebellar abscess is very challenging, but adequate therapy and appropriate prevention of complications can help reduce morbidity and mortality.

## 1. Introduction

Brain abscess is a focal suppurative condition in the parenchyma of the brain [1,2]. The cerebellum is one of the most common intracranial locations in brain abscess due to otitis media and mastoiditis [1,3]. One or more symptoms, such as fever, headache, decreased consciousness, or focal neurological symptoms, including seizures, balance difficulties, dysphagia, or focal sensorimotor impairments, are common clinical characteristics [4]. Brain abscess as a universal health problem with high morbidity and mortality rates which also causes a major widespread public health problem in the worldwide [5]. The development of non-invasive radiological diagnostic tools, antibiotics that transcend the blood-brain barrier and enter the abscess itself, and minimally invasive surgical procedures have altered the diagnosis and management of cerebellar abscess in recent decades [1]. Therefore, we are interested in reporting two cases of cerebellar abscess that were complete resolution with conservative management. This case report has been reported in line with the SCARE Criteria [6].

## 2. Case presentation

## 2.1. Case 1

A 14-year-old girl presented with generalized onset of tonic-clonic seizures with a duration of approximately 1 minute. The seizures occurred twice; the second seizure occurred 1 h after the first seizure and had the same form. Two days earlier, the patient had experienced vertigo and fever. Vertigo was felt continuously and did not improve with a change in position. Nausea and vomiting were also present. A week earlier, she had experienced left ear pain and yellow discharge. She had never experienced a similar illness. On physical examination, she was conscious; normal vital signs with neurological deficits were diagnosed as left abducens palsy, left facial palsy (peripheral type), bidirectional horizontal nystagmus, and slight left hemiparesis.

Abnormal results were initially obtained in the emergency room, namely leukocytosis of 14.800  $\mu$ L and slight hypernatremia of 147 mmol/L. A computed tomography (CT) head scan with contrast showed a left cerebellar abscess (dimensions  $2 \times 1.8 \times 1.4$  cm) accompanied by communicating hydrocephalus (Fig. 1 A, B). She also performed Schuller's photo to find the infection source; right and left chronic

<sup>\*</sup> Corresponding author. Department of Neurology, Faculty of Medicine, Universitas Airlangga – Dr. Soetomo General Academic Hospital, Jl. Mayjend Prof. Dr. Moestopo No. 6-8, Airlangga, Gubeng, Surabaya, East Java, 60286, Indonesia.

E-mail addresses: [rivasty@gmail.com](mailto:rivasty@gmail.com) (R.S. Radiansyah), [paulus.sugianto@fk.unair.ac.id](mailto:paulus.sugianto@fk.unair.ac.id) (P. Sugianto), [cindycecilia.91@gmail.com](mailto:cindycecilia.91@gmail.com) (C. Cecilia).

<https://doi.org/10.1016/j.amsu.2022.104001>

Received 11 May 2022; Received in revised form 12 June 2022; Accepted 12 June 2022

Available online 16 June 2022

2049-0801/© 2022 Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

sclerotic-type osteomastoiditis was identified (Fig. 2).

The patient and family declined surgical intervention for diagnosis or treatment. During hospitalization, she was given the antibiotic ceftriaxone twice daily (2 g every 12 hours) and 500 mg of metronidazole every 6 hours intravenously. To prevent seizure recurrence, she was given phenytoin intravenously (100 mg every 8 hours); for her ear infection, she was given 3% hydrogen-peroxide ear drops and fluoroquinolone ear drops every 8 hours. After four days of treatment, she underwent an electroencephalogram, results showed background slow activity and continuous slow activity with the possibility of generalized epileptogenic.

After three weeks of antibiotics, the CT head scan showed that the cerebellar abscess had shrunk to a size of  $0.8 \times 0.9 \times 0.8$  cm (Fig. 1C, D). Clinically, she had no complaints of seizure or dizziness and did not have any neurological deficits. In the sixth week, no cerebellar abscess was found in the CT head scan (Fig. 1 E, F). She was discharged from hospital and antibiotics were discontinued.

## 2.2. Case 2

An immunocompetent 45-years-old male, presented with low-grade fever, severe central vertigo, progressive cerebellar ataxia, and other cerebellar syndromes which had been present for two years and became prominent four months before hospital admission. He had a three-year history of chronic otitis media, which had been treated by antibiotics several times and by aural toileting several times.

Physical examinations showed stable vital signs, subfebrile temperature, and full consciousness with a Glasgow coma scale score of 15. No nuchal rigidity, papilledema, or other signs of increased intracranial pressure were observed. Primary neurological deficit was central vertigo with left and right cerebral disfunction. Otology and mastoid examination showed chronic otitis media without acute infection, discharge, or tenderness. Laboratory investigations showed normal values (i.e.,

negative for blood and ear cultures); however, an audiogram showed mixed hearing loss for the right ear. Chest, paranasal, and skull X-rays were also normal.

The head magnetic resonance imaging (MRI) with contrast showed one larger and one smaller abscess in the right cerebellar lobe with respective dimensions of  $\pm 1.8 \times 1.7 \times 2.2$  cm and  $\pm 1.7 \times 1.5 \times 2$  cm (Fig. 3A). Both were hypointense in T1 and hyperintense in T2. There were no signs of brainstem compression or increased intracranial pressure. The patient was diagnosed with multiple otogenic cerebellar abscesses.

The patient declined surgical intervention for diagnosis and treatment. He was treated with intravenous ceftriaxone (2 g every 12 hours) and metronidazole (500 mg every 6 h); he was also given symptomatic treatment for central vertigo with betahistine mesylate, diphenhydramine and flunarizine. These treatments were administered for one month. The abscesses shrank into a single nodule ( $\pm 0.6 \times 0.6 \times 0.9$  cm) after four weeks of antibiotic administration, and the patient was discharged with minimal neurological deficit (Fig. 3B). Symptoms of vertigo and cerebellar syndrome decreased significantly, and the patient regained the ability. Antibiotics were continued for another 2 weeks and MRI was performed (Fig. 3C). The abscess had resolved completely.

## 3. Discussion

In Western countries, otogenic brain abscess accounts for 1%–2% of space-occupying processes in the brain, whereas, in developing countries, it accounts for 8% [7]. The largest risk factor is the transmission of diseases from nearby areas (50% of cases) after otitis, mastoiditis, sinusitis, meningitis, neurosurgery, or traumatic brain injury or through hematogenous spreading [8]. Once the blood–brain barrier has been penetrated, the brain is extremely vulnerable to bacterial infection. Cerebellar abscess is the second-most-common complication after meningitis, which is caused by otitis media [5,7,8]. In a typical pyogenic

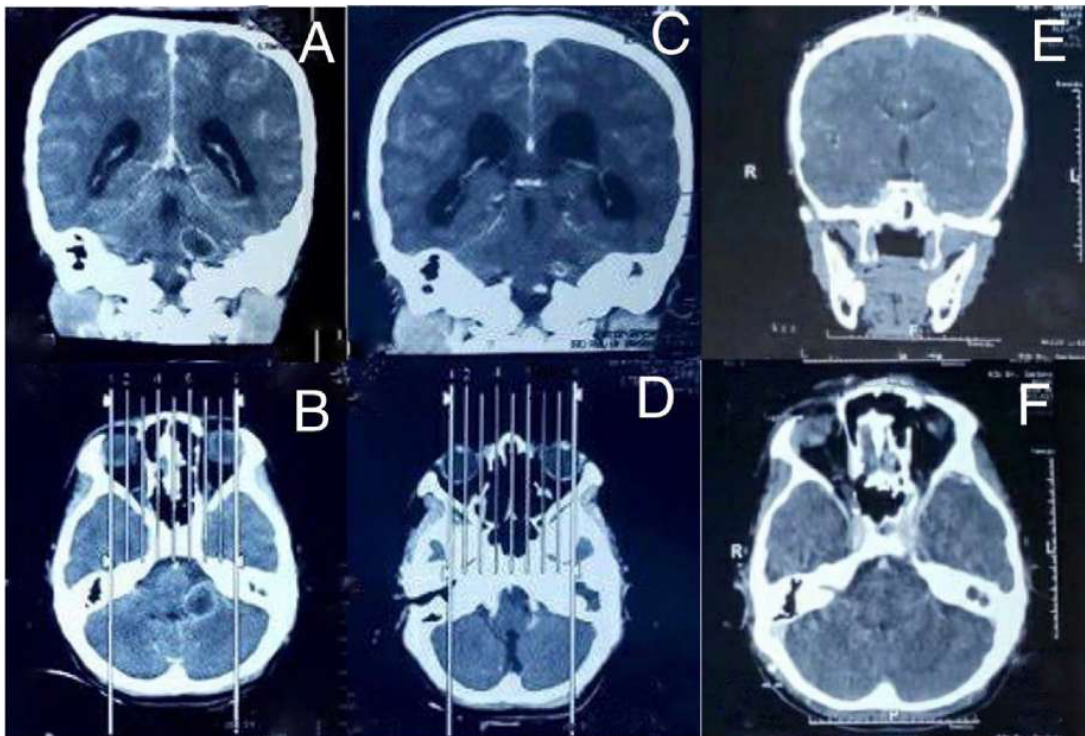


Fig. 1. Case 1. A, B Initial CT head scan with contrast. C, D CT head scan at the third week of antibiotic administration. E, F CT head scan at the sixth week of antibiotic administration.





Fig. 2. Schuller's photo case 1.

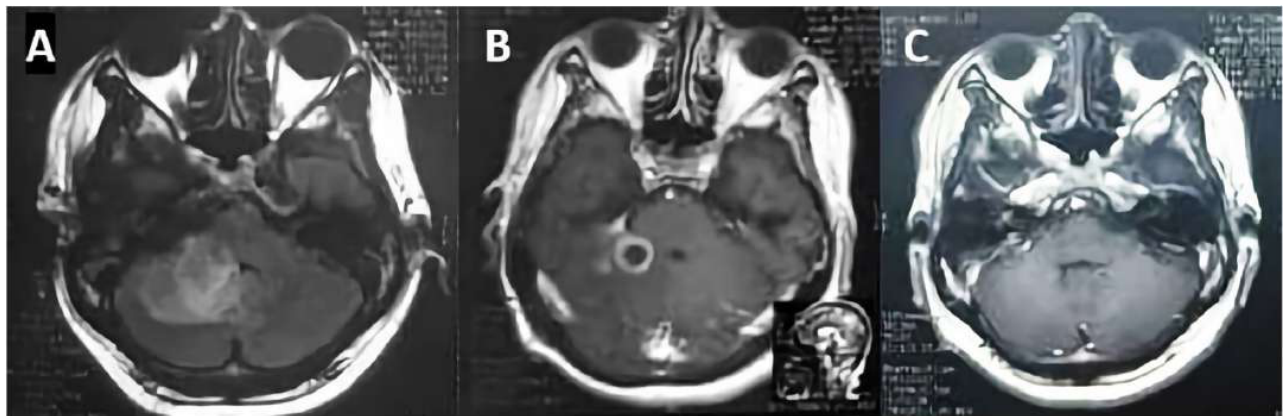


Fig. 3. Case 2. A Initial head MRI with contrast. B CT head scan at the fourth week of antibiotic administration. C MRI at the sixth week of antibiotic administration.

abscess, the outer wall made up of collagen, granulation tissue, macrophages, and gliosis which surrounds the central necrotic tissue [3].

The earliest stage of brain abscess is early cerebritis, which can cause a perivascular inflammatory response around the necrotic center, accompanied by edema. Subsequently, the necrotic center grows to its maximum size, and a capsule is formed through fibroblast accumulation and new vascularization. The capsule is thickened by a large amount of reactive collagen, yet inflammation and edema extend beyond it [3]. Around the abscess capsule, astrogliosis and cerebral edema can be detected. Gliosis can last for months or years following therapy, and it's a major risk factor for the development of post-infectious epilepsy [7]. However, in the two cases presented here, the abscesses were completely resolved without sequelae.

Brain abscess is commonly typified by the following symptoms: 82.5% headache, 75% altered levels of consciousness, and 66.9% papilloedema [8]. Neurological symptoms vary depending on where the abscess is located and can be modest or severe. Patients with brainstem or cerebellar abscesses may present with cranial nerve palsies, gait disturbances, headaches, or altered levels of consciousness due to hydrocephalus [9]. Seizures affect up to 25% of patients. Brain scans should be performed for all patients with suspected brain abscess. CT head scans with contrast provide a quick way to detect abscess size, number,

and localization [2,10].

Neurosurgical drainage is the preferred treatment for a brain abscess [11]. Twenty years ago, total resection was often recommended but now has a limited role due to medical advances and minimally invasive neurosurgery. Neurosurgical intervention has been suggested for abscesses with a diameter greater than 2.5 cm; however, there is a lack of evidence from comparison research, thus this size cannot be considered a definitive indication for aspiration. Regardless of size, neurosurgical intervention may be required for patients whose abscess have caused a shift in the brain, resulting in brain herniation [3].

Broad-spectrum antibiotics that can cross the blood-brain barrier and blood-cerebrospinal fluid barrier in sufficient concentrations should be used as the first line of treatment. Empirical antibiotics should include coverage for anaerobic organism, such as third-generation cephalosporins and metronidazole, as well as vancomycin if the patient has a history of penetrating trauma or recent neurosurgical procedures [3,10]. In patients with bacterial brain abscess, intravenous antibiotic therapy has traditionally lasted six to eight weeks. Delays in initiating antibiotics therapy can lead to poor results, as demonstrated by a retrospective study in which the median gap between diagnosis and initiation of antibiotic therapy was two days [3]. Metronidazole can easily penetrate an abscess; the intralesional dose has been found to be

40 mg/ml. It is highly effective against many anaerobes but ineffective against aerobic organisms. Based on these characteristics, many experts recommend this medication for the majority of patients with cerebral abscess [4].

In the two cases presented above, the patients began to improve clinically after receiving antibiotics intravenously, with brain imaging showing a reduction in abscess size. Both patients responded well to medical management. Antibiotic therapy was continued for six weeks, and post-treatment brain scans revealed abscess resolution.

#### 4. Conclusion

Conservative management of cerebellar abscess is unusual and very challenging. In Indonesia, the success rate for handling this cases is still low. In these two cases, both patients were immunocompetent and they refused to undergo surgical intervention. Regardless, it was demonstrated that an otogenic cerebellar abscess could respond to antibiotic treatment and symptomatic therapy. The abscesses were completely resolve and the patients recovered without neurologic sequelae. In light of this information, future research should examine conservative management as the main option to treat cerebellar abscess.

#### Ethical approval

Exempting ethical approval.

#### Source of funding

None.

#### Declaration of competing interest

None.

#### Consent

Written informed consent was obtained from the adult patient and the parents of the 14-year old child for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in Chief of this journal on request.

#### Author contribution

All authors contributed equally to this work including writing and critical revision.

#### Registration of research studies

None.

#### Guarantor

Riva Satya Radiansyah, Paulus Sugianto, Cindy Cecilia.

#### Provenance and peer review

Not commissioned, externally peer reviewed.

#### Acknowledgment

Department of Neurology, Faculty of Medicine, Universitas Airlangga – Dr. Soetomo General Academic Hospital.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104001>.

#### References

- [1] I. Brook, Microbiology and treatment of brain abscess, *J. Clin. Neurosci.* 38 (2017) 8–12, <https://doi.org/10.1016/j.jocn.2016.12.035>.
- [2] A.S. Utama, M.A. Parengrengi, Giant brain abscess in A pediatric patient with congenital heart disease: a case report, *J. Heal. Sci. Med. Res.* (2022) 1–5, <https://doi.org/10.31584/jhsmr.2022872>.
- [3] M.C. Brouwer, A.R. Tunkel, G.M. McKhann 2nd, D. Van de Beek, Brain abscess, *N. Engl. J. Med.* 371 (5) (2014) 447–456, <https://doi.org/10.1056/NEJMra1301635>.
- [4] H. Alvis-Miranda, S. Castellar-Leones, M. Elzain, L. Moscote-Salazar, Brain abscess: current management, *J. Neurosci. Rural Pract.* 4 (5 SUPPL) (2013), <https://doi.org/10.4103/0976-3147.116472>.
- [5] S. Menon, R. Bharadwaj, A. Chowdhary, D.V. Kaundinya, D.A. Palande, Current epidemiology of intracranial abscesses: a prospective 5 year study, *J. Med. Microbiol.* 57 (10) (2008) 1259–1268, <https://doi.org/10.1099/jmm.0.47814-0>.
- [6] R.A. Agha, T. Franchi, C. Sohrabi, et al., The SCARE 2020 guideline: updating consensus surgical CAse REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230, <https://doi.org/10.1016/j.ijsu.2020.10.034>.
- [7] P. Feraco, D. Donner, C. Gagliardo, et al., Cerebral abscesses imaging: a practical approach, *J. Popul. Ther. Clin. Pharmacol.* 27 (3) (2020), e14–e27, <https://doi.org/10.15586/jptcp.v27i3.688>.
- [8] M.C. Brouwer, J.M. Coutinho, D. Van De Beek, Clinical characteristics and outcome of brain abscess :Systematic review and meta-analysis, *Neurology* 82 (9) (2014) 806–813, <https://doi.org/10.1212/WNL.000000000000172>.
- [9] M.D. Shaw, J.A. Russell, Cerebellar abscess, *J. Neurol. Neurosurg. Psychiatry* 38 (1975) 429–435, <https://doi.org/10.1136/jnnp.38.5.429>.
- [10] P. Sugianto, F.F. Sutantoyo, Skipped multilevel lesion as an atypical tuberculous spondylitis mimicking spinal metastasis: a case report, *Neurol. Asia* 26 (3) (2021) 627–628, <https://doi.org/10.54029/2021jun>.
- [11] B. Viswanatha, K. Nsaeruddin, Conservative management of otogenic brain abscess with surgical management of attico antral ear disease: a review, *Indian J. Otolaryngol. Head Neck Surg.* 64 (2) (2012) 113–119, <https://doi.org/10.1007/s12070-012-0524-7>.