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FUNGAL BIOMARKERS IN THE DIAGNOSIS OF INVASIVE FUNGAL INFECTIONS COMPLICATED SUBSETS FOR SEXUALLY TRANSMITTED DISEASES AND SEPSIS

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ABSTRACT **Background:** Paediatric sepsis (PS) is a major challenge in the world and our Asian Indian Continent. According to the present available research data this is a new grey area needs to identify risk assessment and its early detection. The stages of sepsis symptoms are required early detection of mild infections. In chronic clinical conditions with complicating cases are required proper diagnosis and monitoring. Although, several causal factors associated in various warning scores existed. Still effectiveness is limited, in the prehospital settings for accurate and rapid assessment, monitoring, evaluation process are required regularly for this cases. **Material And Methods:** We examine the roles of clinical prediction tools and newly developed biomarkers in pediatric sepsis. In the traditional biomarkers, like procalcitonin (PCT), have improved diagnostic accuracy. But it is insufficient to obtain in proper results. Over prescription of antibiotics were delayed their treatment process. So we have collected the recent advances biomarkers and combining with their multiple biomarkers promise for early screening, though this approach can be resource-intensive and less feasible outside hospitals were collected on it. We have collected in details through the authentic data bases on the pubmed/pubmed central, wave of sciences, EMBASE and goggle scholar etc. **Results:** A total of (n=500) subjects we predicting sepsis outcomes (75-85%) is tailoring therapy remains underexplored till yet. In the traditional biomarkers offer some prognostic insight, their reliability is very limited to the study including with therapeutic decisions. Novel biomarkers, particularly identifying early organ dysfunction, hold potential for improved prognostic accuracy is more than (85-95%). In hospitals, require further validation, or need specialized assays not commonly available, limiting with several broadening with several clinical uses. **Conclusion:** According to the clinical judgment with existing with new tools and newly identified biomarkers are quite helpful in paediatric sepsis management, improving outcomes and minimizing risks of the diseases burden. Further additional research is needed to establish the reliable protocols and guidelines to enhance the clinical applicability of these tools.

KEYWORDS : Biomarkers; organ dysfunction; pediatric sepsis; cell blood count; C-reactive protein; procalcitonin; lactate; ferritin, Research and development (R&D), Management

INTRODUCTION:

The human body is colonized by the diverse microorganisms including with bacteria being the most extensively studied and research [1]. All fungis were collectively known as the mycobiota.These were increasingly recognized as an integral components of the microbiota, inhabiting into mucosal surfaces (MSFs) [2]. The commensally fungi influences the host immunity in to bacteria. In metabolism it contributes into other essential functions [3-4]. This emerging understanding of positions fungi had the potential biomarkers for the diagnosis and prognosis of various diseases [4-5].As dual roles of fungi commensalls and pathogens had the potential effect of antifungal antibodies. This is to serve as better diagnostic and new prognostic tools [6-7]. In chronic immune-inflammatory non-communicable diseases (NCDs), including with inflammatory bowel disease, rheumatoid arthritis, multiple sclerosis, and neurodegenerative disorders [8-9-10-11]. Need proper research and management of these cases. Current challenges and outline including with future perspectives for leveraging fungal biomarkers are quite helpful in the clinical practice [10-12]. *Candida* species are the predominant cause of fungal infections in patients with sepsis and sexually transmitted diseases in the hospital treated patients substantially into morbidity and mortality [12-13]. Candidaemia and other forms of invasive candidiasis species affects the patients who are immunocompromised or critically ill patients [13-14].In contrast, mucocutaneous forms of candidiasis, also responsible for oral thrush and vulvovaginal candidiasis in healthy individuals [14-15].

Mucocutaneous candidiasis is not a life-threatening but it can cause considerable as discomfort for patients [16].Recurrent infections, complications, in patients with underlying conditions are basically diabetes and those were taking immunosuppressive therapies [17]. The rise of difficult-to-treat *Candida* infections is driven out a new host factors and antifungal resistance [16-18].Pathogens are *Candida auris* (*Candidozyma auris*) and fluconazole-resistant *Candida parapsilosis*, poses a serious global health risks [19-20]. *Candida* spp, potentially causing confusion in clinical practice as their taxonomic classifications[21-22].Current management and guidelines are limited in the scope, with poor coverage of emerging pathogens and new treatment options were getting poor outcomes [23].

Recommendations For Managing *Candida* Infections:

An Invasive Aspergillosis (IA) species were affecting the immunocompromised individuals [24].It is including with hematopoietic stem cell transplant (HSCT) solid organ transplant (SOT) recipients and transplant cases [24-25].Patients with prolonged neutropenia in ICU with severe influenza or COVID-19 patients also suffered this infections [20-26]. In Differentiating with cryptococcal meningitis from tuberculous meningitis is very critical for initiating appropriate treatment and improving patient outcomes in the near future [27]. In overlapping with pathogenic mechanisms, clinical presentations, laboratory findings, imaging features complicate accurate diagnosis and management [28-30]. Differentiating cryptococcal meningitis from tuberculous meningitis is critical for initiating appropriate treatment and improving patient outcomes including with sepsis patients and sexually transmitted diseases (STDs)[30-31]. It is overlapping with pathogenic mechanisms, clinical presentations, laboratory findings, imaging features complicate accurate diagnosis and management [32] Developed nomogram accurately distinguishes with cryptococcal meningitis from tuberculous meningitis with superior discriminative ability, clinical relevance is providing a valuable diagnostic new tool for clinicians [30-33]. It is differentiating cryptococcal meningitis from tuberculous meningitis were very critical for initiating appropriate treatment and improving outcomes of patients [33-34]. It is overlapping with new developed pathogenic mechanisms, clinical presentations, laboratory findings, imaging features in the complicate accurate diagnosis [35]. In the developed nomogram distinguishes cryptococcal meningitis from tuberculous meningitis with superior discriminative ability, clinical relevance, and accurately [35-36]. It is providing with a valuable diagnostic tool for the clinicians [37]. As developed nomogram distinguishes cryptococcal meningitis from tuberculous meningitis [36-37]. It is including with superior discriminative ability and clinical relevance [38]. It is providing valuable diagnostic tool for clinicians soon [38-40].

MATERIALAND METHODS:

We collected the Medical record coding enquiries identified cases of Microbiological data including sample type, culture, and susceptibility testing from (2020- May 2025). We examines the roles of clinical prediction tools and biomarkers in pediatric sepsis and the traditional biomarkers, like procalcitonin (PCT). We also find out the diagnostic accuracy, insufficient alone, overprescription of antibiotics or delayed treatment in details in detailed Combining with the multiple biomarkers for early screening, this approach will be resource-intensive and less feasible in the outside hospitals.

RESULTS:

A total of (n=500) subjects we predicting sepsis outcomes with

sexually transmitted diseases (STDs) is (75-85%) in tailoring therapy remains underexplored till yet. In the traditional biomarkers offer some prognostic insight and their reliability is very limited. Novel biomarkers, identifying early organ dysfunction, hold potential for improved prognostic accuracy is more than (85-95%). In hospitals, require further validation, or need specialized assays not available, limiting with several broadening with several clinical uses.

DISCUSSION:

Acute respiratory infections (ARIs) caused by the viruses SARS-CoV-2, influenza viruses, and respiratory syncytial virus (RSV) and others responsible viruses [40-41]. It posses the significant global health and very specific and challenges for the elderly and immunocompromised individuals [40-42].Acute viral infections (AVIs) is the most evidence indicates that can manipulate the host's epigenome through in vitro mechanisms [41].DNA methylation and histone modifications as part of the immune response and its specification [43]. Above all the epigenetic alterations persisted with the acute phase, influencing long-term immunity and susceptibility to subsequent infections [44]. The Post-infection and its modulation of the host epigenomic factors is helping with the distinguish infected from uninfected individuals and predict disease severity for sepsis and sexually transmitted diseases (STDs) [40-45].

These interactions are crucial for developing with effective treatments preventive strategies for viral ARIs are very important [45-46].The critical role of epigenetic modifications following viral ARIs in regulating with the host's innate immune defences mechanisms [47]. The implications of these modifications for diagnosing, prognosis for preventing the diseases [48].Treating viral infections, contributing into the advancement of precision medicine [49]. In hypermethylation of interferon-stimulated genes in the severe COVID-19 cases identified that specific epigenetic changes and developed the new biomarkers [49-50]. It could serve as the new biomarkers for disease progression and early detection [50-51]. Epigenetic therapies, including with inhibitors of DNA methyltransferases and histone deacetylases are very important [51-52].It shown the promises within modulating the immune response and improving patient outcomes carefully [52-53].It provides valuable insights into the epigenetic landscape of viral ARIs, extending beyond traditional genetic perspectives of STDs and paediatric sepsis [50-51-52-53-54].

New insights are essential for advancing diagnostic techniques and developing innovative treatments growing threat of emerging viruses causing ARIs globally [54]. Microbiological diagnoses relied primarily on superficial sampling of contiguous, non-sterile sites [55]. An isolated organisms were representative of the underlying pathogen reflected is colonising flora was difficult to determine and collaboration [55-56]. Close collaboration between surgeons, physicians and the microbiology laboratory is critical to support for the treatment is required [57-58]. In accurate interpretation of microbiological results gives better inform both medical and surgical management *Neisseria gonorrhoeae* is fastidious. In the visual etiological evidence is extremely difficult to obtain the appropriate results [57-58]. Positive results from blood cultures female patient was admitted to our hospital with fever [59-60]. Pain was diagnosed with infectious fever with series of examinations routinely[60]. The pathogen could not be determined. *N. gonorrhoeae* identified by blood culture by mass spectrometry [61].

In combined with the drug sensitivity/specificity reports ceftriaxone given and recovered well [62]. The importance of standardized timely testing and collaboration between clinical and microbiology laboratories are very important [63]. This novel net work reports evidence based immunosuppressed tumour microenvironment in HPV-negative OAC [64].It supports potential of both HPV-positivity and CD8 [64] In the Treg ratio had potentially useful prognostic biomarkers [63-64]. *Haycocknema perplexum* also a very emerging cause of parasitic myositis described cases associated with residence or travel to Australia [64-65]. In reservoirs and risk factors for human infection are not clear, resulting in delayed diagnosis and treatment are important [65-66].Although the diagnosis remains challenging and is confirmed on their muscle biopsy with histological examination [66-67]. In Molecular techniques are not widely available. But we have been previously suggested as an adjunctive new tool for diagnosis [67].An utility of this assay for diagnosis of *H. perplexum* on fresh frozen tissue samples as well as a possible test of cure sepsis [68]. As a new knowledge increases now the ability to evaluate lesser invasive diagnostic options had become possible and resulting the earlier diagnosis for these patients with sepsis and STDs [69-70].

Recent Advances And Future Prospective:

In Inflammatory cardiomyopathy is a critical ill condition characterised by the presence of inflammatory cells in the myocardium [70-71]. It is leading with significant deterioration in cardiac function [72]. This condition involves multiple factors, both infectious and non-infectious causes [73]. While it is primarily associated with viral infections, other potential causes include bacterial, protozoal, or fungal infections, as well [74].A wide variety of toxic substances and drugs, and systemic immune-mediated pathological conditions [75].In spite of comprehensive investigation, the presence of inflammatory cardiomyopathy accompanied by left ventricular dysfunction (LVD) [76]. In heart failure or arrhythmia is indicative of an unfavourable outcome [77]. The reasons for the occurrence of either favourable outcomes, characterised by the absence of residual myocardial injury [78], or unfavourable outcomes, marked by the development of dilated cardiomyopathy, in patients afflicted by the condition remain to be elucidated daily [79-80].

The relatives had contributions of pathogenic agents, genomic profiles of the host, and environmental factors in disease progression [81]. Resolution remain subjects of ongoing discourse [82]. This includes the determination of which viruses function as active inducers and which merely play a bystander role [83]. It remains unknown which changes in the host immune profile is critical in determining the outcome of myocarditis caused by various viruses [84]. It is including coxsackievirus B3 (CVB3), adenoviruses, parvoviruses B19 and SARS-CoV-2 [85].

The concise summary and comprehensive assessment of the extant evidence on the pathogenesis [86], diagnosis and treatment of myocarditis and inflammatory cardiomyopathy [87]. Its focus is exclusively on virus-induced and virus-associated myocarditis [88]. Lacunae of knowledge in this field are identified and the extant experimental models are evaluated [89].With the aim of proposing future directions for the research domain [90]. This includes differential gene expression that regulates iron and lipid and metabolic remodelling [91]. Current state of knowledge regarding the cardiovascular implications of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is also discussed [92-95]. It is along with the open questions that remain to be addressed by the mycobiome in the tumor microenvironment of non-smokers with early-stage lung adenocarcinoma (ES-LUAD [96-97]. It has been minimally investigated. Our study demonstrates that the interactions between the mycobiome and transcriptome within tumors may help elucidate the pathogenic mechanisms of ES-LUAD [98-100]. Fungi, as a potential predictive tool, can be used as an additional resource for accurately detecting and discriminating individuals with ES-LUAD [101]. In contrast to traditional approaches that focus on individual cytokines or simple ratios, the present analysis employed programmatically generated ratios between pro-inflammatory and anti-inflammatory cytokines, refined through feature selection [102-108].

Limitations:

Although, further validation in larger and more diverse cohorts is warranted, these findings underscore the potential of advanced cytokine-based diagnostics to enhance precision medicine in infection management for infectious fungal diseases are important.

CONCLUSION:

This study demonstrates the utility of this assay for diagnosis of *H. perplexum*, particularly on fresh frozen tissue samples as well as a possible test of cure based research aspects noted. As knowledge increases, the ability to evaluate less invasive diagnostic options may become possible resulting in earlier diagnosis for these patients.

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REFERENCES:

1. Diez-Martin E, Hernandez-Suarez L, Astigarraga E, Ramirez-Garcia A, Barreda-Gómez G. Mycobiota and Antifungal Antibodies as Emerging Targets for the Diagnosis and Prognosis of Human Diseases. Journal of Fungi. 2025 Apr 9;11(4):296.
2. Cornely OA, Sprute R, Bassetti M, Chen SC, Groll AH, Kurzai O, Lass-Flörl C, Ostrosky-Zeichner L, Rautemaa-Richardson R, Revathi G, Santolaya ME. Global guideline for the diagnosis and management of candidiasis: an initiative of the ECMM in cooperation with ISHAM and ASM. The Lancet Infectious Diseases. 2025 Feb 13.
3. Herrera S, Magyar U, Husain S. Invasive Aspergillosis in the Current Era. Infectious Disease Clinics. 2025 Mar 28.
4. Eustace MB, Braddick M, Alcorn K, Choong K, Satyaputra F, Siebert D, Smith S,

Sommerville R, McCarthy K. Microbiological basis of central skull base osteomyelitis in Queensland, Australia, 2010–2020. Pathology. 2025 Feb 1;57:S92-3.
5. Kong D, Qiu Y, Zou L, Zhang Q, Zhou W, Yang J. A case of bloodstream infection caused by Neisseria gonorrhoeae. Open Life Sciences. 2025 Apr 10;20(1):20221017.
6. Wui S, Hewavisenti RV, Rabiei M, Kelleher A, Rajendra S, Sasson SC. Multiplex immunofluorescence reveals immune-suppressed tumour microenvironment in HPV-negative oesophageal adenocarcinoma. Pathology. 2025 Feb 1;57:S92.
7. Davidson N, Lowry K, Parmar BV, Robertson T, Gupta R, Harris P, Whiley D. A perplexing diagnosis: role of real-time PCR for diagnosis of Haycocknema perplexum. Pathology. 2025 Feb 1;57:S92.
8. Saha A, Ganguly A, Kumar A, Srivastava N, Pathak R. Harnessing Epigenetics: Innovative Approaches in Diagnosing and Combating Viral Acute Respiratory Infections. Pathogens. 2025 Feb 1;14(2):129.
9. Nappi F. Myocarditis and Inflammatory Cardiomyopathy in Dilated Heart Failure. Viruses. 2025 Mar 27;17(4):484.
10. Agidigbi TS, Adeniyi GP, Adeniyi BA, Majekodunmi OE, Mahady GB. Inflammatory Pathways: A Review of the Complex Interaction between Infection, Chronic Diseases and Psychiatric Disorders. Asian Journal of Research and Reports in Neurology. 2025 Jan 14;8(1):27-51.
11. Wang X, Liang Y, Yang F, Shi Y, Shao R, Jing R, Yang T, Chu Q, An D, Zhou Q, Song J. Molecular mechanisms and targeted therapy of progranulin in metabolic diseases. Frontiers in Endocrinology. 2025 Apr 11;16:1553794.
12. Nielsen MC, editor. Infectious Diseases Diagnostics: From Current Strategies to Future Technologies, An Issue of the Clinics in Laboratory Medicine: Infectious Diseases Diagnostics: From Current Strategies to Future Technologies, An Issue of the Clinics in Laboratory Medicine, E-Book. Elsevier Health Sciences; 2025 Feb 5.
13. Mallick DC, Kaushik N, Goyal L, Mallick L, Singh P. A Comprehensive Review of Candidemia and Invasive Candidiasis in Adults: Focus on the Emerging Multidrug-Resistant Fungus Candida auris. Diseases. 2025 Mar 24;13(4):93.
14. Schroeder JA, Wilson CM, Pappas PG. Invasive Candidiasis. Infectious Disease Clinics. 2025 Mar 1;39(1):93-119.
15. Asawari P, Talreja S, Rohan B, Vijay J. Unraveling Candidiasis: Pathogenic Mechanisms and the Spectrum of Infections. Asian Journal of Pharmaceutical Research and Development. 2025 Feb 15;13(1):174-80.
16. Patel BR. Mucosal-Dominant Stevens-Johnson Syndrome Presenting as Hemorrhagic Glossitis in a Multimorbid Patient: A Diagnostic Challenge. Cureus. 2025 Apr 24;17(4).
17. Park S, Lee AY, Jeong J, Heo KN, Han JM, Ah YM, Lee JY. Incidence and spectrum of typical complications associated with immunosuppressant use in rheumatic disease: A nationwide retrospective study. British Journal of Clinical Pharmacology. 2025 Apr 7.
18. Gaffar NR, Valand N, Girija UV. Candidiasis: Insights into Virulence Factors, Complement Evasion and Antifungal Drug Resistance. Microorganisms. 2025 Jan 25;13(2):272.
19. Bastos RW, de Aguiar Peres NT, da Silva KJ, Eufrasio LG, de Carvalho DS, Cruz GS, Lucini F, Silva LS, Silva SE, Vechi HT, do Monte Alves M. Antifungal resistance in yeasts from One Health perspective: A Brazilian study. Science of The Total Environment. 2025 Apr 10;973:179139.
20. Silva DL, Peres NT, Santos DA. Key fungal coinfections: epidemiology, mechanisms of pathogenesis, and beyond. mBio. 2025 Apr 2:e00562-25.
21. Tajane SB, Pawar S, Patil S. Revisiting the History of Candidiasis. Cureus. 2025 Feb 11;17(2).
22. Andrade DK, Wang B, Lima EM, Shebeko SK, Ermakov AM, Khramova VN, Ivanova IV, Rocha RD, Vaz-Velho M, Mutukumira AN, Todorov SD. Kombucha: An Old Tradition into a New Concept of a Beneficial, Health-Promoting Beverage. Foods. 2025 Apr 28;14(9):1547.
23. Lema MW. Wastewater crisis in East African cities: challenges and emerging opportunities. Discover Environment. 2025 Feb 18;3(1):18.
24. Wheeler A, Masters J, Pradhan A, Roth JM, Degenhardt PL, Dore GJ, Matthews GV, Cunningham EB, Peacock A, Colledge-Frisby S, Grebely J. Prevalence of injecting-related bacterial and fungal infection among people who inject drugs: a systematic review and meta-analysis. InOpen Forum Infectious Diseases 2025 Feb 24 (p. ofaf108). Oxford University Press.
25. Gutiérrez-Villanueva A, Diego-Yagüe I, Gutiérrez-Martín I, García-Prieto S, Gutiérrez-Abreu E, Fernández-Guitián R, Castilla-Martínez I, Bermejo-Moreno N, Miguel-Ontañon N, Calderón-Parra J, Callejas-Díaz A. Is neutropenia still the main risk factor for invasive aspergillosis? A contemporary university hospital retrospective cohort of invasive aspergillosis in neutropenic and non-neutropenic patients. Annals of Clinical Microbiology and Antimicrobials. 2025 Apr 25;24:28.
26. Alessandri F, Giordano G, Sanda VC, D'Ettorre G, Pugliese F, Ceccarelli G. Outcomes of severe aspergillosis in patients undergoing extracorporeal membrane oxygenation: a systematic review. Artificial Organs. 2025 Mar;49(3):362-72.
27. Oo N, Agrawal DK. Epidemiology, Pathogenesis, Clinical Manifestations, and Management Strategies of Tuberculous Meningitis. Archives of internal medicine research. 2025 Feb 10;8(1):48.
28. McKinney RA, Wang G. Langerhans cell histiocytosis and other Histiocytic lesions. Head and Neck Pathology. 2025 Dec;19(1):1-6.
29. Lauriero F, Vita CV, Perazzolo A, Sanseverino G, Moliterno E, Rovere G, Marano R, Natale L. Acute Myocarditis and Inflammatory Cardiomyopathies: Insights From Cardiac Magnetic Resonance Findings. Echocardiography. 2025 Feb;42(2):e70099.
30. Muscogiuri E, Van Ballaer V, De Wever W, Di Dedda E, Dubbeldam A, Godinas L, Delcroix M, Bogaert J. Uncommon Causes of Pulmonary Hypertension With Associated Cardiomyopathy: Computed Tomography and Magnetic Resonance Imaging of Cardiothoracic Manifestations. Echocardiography. 2025 Feb;42(2):e70103.
31. Oo N, Agrawal DK. Epidemiology, Pathogenesis, Clinical Manifestations, and Management Strategies of Tuberculous Meningitis. Archives of internal medicine research. 2025 Feb 10;8(1):48.
32. McKinney RA, Wang G. Langerhans cell histiocytosis and other Histiocytic lesions. Head and Neck Pathology. 2025 Dec;19(1):1-6.
33. Tan X, Deng M, Fang Z, Yang Q, Zhang M, Wu J, Chen W. A nomogram to predict cryptococcal meningitis in patients with pulmonary cryptococcosis. Heliyon. 2024 May 15;10(9).
34. Rocha MF, Bain HD, Stone N, Meya D, Darie L, Toma AK, Lunn MP, Mehta AR, Coughlan C. Reframing the clinical phenotype and management of cryptococcal meningitis. Practical Neurology. 2025 Feb 1;25(1):25-39.
35. McKinney RA, Wang G. Langerhans cell histiocytosis and other Histiocytic lesions. Head and Neck Pathology. 2025 Dec;19(1):1-6.
36. Tan X, Deng M, Fang Z, Yang Q, Zhang M, Wu J, Chen W. A nomogram to predict cryptococcal meningitis in patients with pulmonary cryptococcosis. Heliyon. 2024 May 15;10(9).
37. Liang F, Li R, Yao M, Wang J, Li Y, Lei L, Guo J, Chang X. Deciphering prognostic indicators in non-HIV cryptococcal meningitis: Constructing and validating a predictive Nomogram model. Medical Mycology. 2024 Sep;62(9):myae092.
38. Lin F, Chen C, Li Y, Liu H. Machine Learning–Based Diagnosis of Cryptococcal Meningitis and Tuberculous Meningitis: A Single-Center Retrospective Clinical Study. InOpen Forum Infectious Diseases 2025 May (Vol. 12, No. 5, p. ofaf217). US: Oxford University Press.
39. Baran JM, Porębska A, Lesisz M, Polak K, Grodzka O, Domitrz I. Investigating Blood Biomarkers That Can Facilitate the Diagnosis of Meningitis—A Systematic Literature Review. International Journal of Molecular Sciences. 2025 Feb 8;26(4):1427.
40. Wijaya FP, Mawuntu AH, Muharomah S, Tumboimbela MJ, Langi FF. Application of Predictive Models for Tuberculous Meningitis Outcome: A Comparative Analysis of Decision Tree and Logistic Regression Approaches. Cermin Dunia Kedokteran. 2025 Apr 8;52(4):221-9.
41. Asseri AA, Al-Qahtani SM, Alzaydani IA, Al-Jarie A, Alyazidi NS, Alrmelawi AA, Alqahtani AM, Alsulayyim RS, Alzailaie AK, Abdullah DM, Ali AS. Clinical and epidemiological characteristics of respiratory syncytial virus, SARS-CoV-2 and influenza paediatric viral respiratory infections in southwest Saudi Arabia. Annals of Medicine. 2025 Dec 31;57(1):2445791.
42. Gallo M, Lasagna A, Renzelli V, Morviducci L, Cortellini A, Monami M, Marino G, Gori S, Verzé M, Ragni A, Tuveri E. Vaccination of people with solid tumors and diabetes: existing evidence and recommendations. A position statement from a multidisciplinary panel of scientific societies. Journal of Endocrinological Investigation. 2025 Apr 23:1-22.
43. Rodríguez-Agustín A, Ayala-Suárez R, Díez-Fuertes F, Maleno MJ, de Villasante I, Merkel A, Coiras M, Casanova V, Alcamí J, Climent N. Intracellular HIV-1 Tat regulator induces epigenetic changes in the DNA methylation landscape. Frontiers in Immunology. 2025 Mar 4;16:1532692.
44. Pang AP, Corley MJ. Epigenetic reprogramming of the host immune system during acute HIV. Current Opinion in HIV and AIDS. 2025 May 1;20(3):209-17.
45. Premadasa LS, McDew-White M, Romero L, Gondo B, Drawec JA, Ling B, Okeoma CM, Mohan M. Epigenetic modulation of the NLRP6 inflammasome sensor as a therapeutic modality to reduce necroptosis-driven gastrointestinal mucosal dysfunction in HIV/SIV infection. Cell Communication and Signaling. 2025 Apr 25;23(1):199.
46. Chakraborty C, Lo YH, Bhattacharya M, Das A, Wen ZH. Looking beyond the origin of SARS-CoV-2: Significant strategic aspects during the five-year journey of COVID-19 vaccine development. Molecular Therapy Nucleic Acids. 2025 Jun 10;36(2).
47. Jawale D, Khandibharad S, Singh S. Innate Immune Response and Epigenetic Regulation: A Closely Intertwined Tale in Inflammation. Advanced Biology. 2025 Feb;9(2):2400278.
48. Jawale D, Khandibharad S, Singh S. Innate Immune Response and Epigenetic Regulation: A Closely Intertwined Tale in Inflammation. Advanced Biology. 2025 Feb;9(2):2400278.
49. Eslami M, Arjmand N, Mahmoudian F, Babaeizad A, Tahmasebi H, Fattahi F, Oksenych V. Deciphering Host–Virus Interactions and Advancing Therapeutics for Chronic Viral Infection. Viruses. 2025 Mar 10;17(3):390.
50. Nguyen KH, Le NV, Nguyen PH, Nguyen HH, Hoang DM, Huynh CD. Human immune system: Exploring diversity across individuals and populations. Heliyon. 2025 Jan 30;11(2).
51. Bajinka O, Ouedraogo SY, Li N, Zhan X. Multiomics as instrument to promote 3P medical approaches for the overall management of respiratory syncytial viral infections. EPMA Journal. 2025 Jan 16:1-22.
52. Suraweera A, O'Byrne KJ, Richard DJ. Epigenetic drugs in cancer therapy. Cancer and Metastasis Reviews. 2025 Mar;44(1):37.
53. Jakobsen MK, Traynor S, Nielsen AY, Dahl C, Staehr M, Jakobsen ST, Madsen MS, Siersbaek R, Terp MG, Jensen JB, Pedersen CB. Stochastic demethylation and redundant epigenetic suppressive mechanisms generate highly heterogeneous responses to pharmacological DNA methyltransferase inhibition. Journal of Experimental & Clinical Cancer Research. 2025 Jan 23;44(1):21.
54. Zieliński P, Stępień M, Chowaniec H, Kalyta K, Czerniak J, Borowczyk M, Dwojak E, Mroczek M, Dworacki G, Ślubowska A, Markiewicz H. Resistance in Lung Cancer Immunotherapy and How to Overcome It: Insights from the Genetics Perspective and Combination Therapies Approach. Cells. 2025 Apr 12;14(8):587.
55. Asim MN, Ibrahim MA, Zaib A, Dengel A. DNA sequence analysis landscape: a comprehensive review of DNA sequence analysis task types, databases, datasets, word embedding methods, and language models. Frontiers in Medicine. 2025 Apr 8;12:1503229.
56. Wijetunga NA, Yahalom J, Imber BS. The art of war: using genetic insights to understand and harness radiation sensitivity in hematologic malignancies. Frontiers in Oncology. 2025 Mar 21;14:1478078.
57. Haider R, Das GK, Ahmed Z, Zameer S. Focus on a Clinical Experience in the Diagnostic and Therapeutic Framing of Head Tremor Responsive to Dopaminergic Therapy. International Journal of Clinical Epidemiology. 2025;4(1).
58. Bari A, Nandyala S, Balakrishnan J, Agarwal T, Dada T, Saxena R, Sharma N. Preferred practice guidelines and narrative review on infectious keratitis in ocular surface diseases. Indian Journal of Ophthalmology. 2025 Apr 1;73(4):508-15.
59. Karaś-Marczak A, Kokot W, Długońska A, Kokot A. Streptococcus pyogenes-associated facial infection with orbital involvement: a spectrum analysis of cases based on clinical course. Klinika Oczna/Acta Ophthalmologica Polonica. 2025;127(1):29-33.
60. Venetsanopoulou AI, Katsigianni I, Skouvaklidou E, Vounotrypidis P, Voulgari PV. Uncommon Coexistence of Systemic Lupus Erythematosus and Psoriatic Arthritis: A Case-Based Review. Current Rheumatology Reviews. 2025 Mar;21(2):116-22.
61. Mix AK, Nguyen TH, Schuhmacher T, Szamosvári D, Muenzner P, Haas P, Heeb L, Wami HT, Dobrindt U, Delikkafa YÖ, Mayer TU. A quinolone N-oxide antibiotic selectively targets Neisseria gonorrhoeae via its toxin–antitoxin system. Nature Microbiology. 2025 Apr;10(4):939-57.
62. Yin TC, Lin HS, Sung PH, Chiang JY, Yang CH, Yip HK, Chen KH. Additional benefits of combined ceftriaxone and adipose-derived mesenchymal stem cells on revamping the outcomes in rodent after acute spinal infection. Journal of Molecular Histology. 2025 Feb;56(1):66.
63. Singhal L, Gupta P, Gupta V. Diagnostic Stewardship in Clinical Microbiology: An Indispensable Component of Patient Care. Infectious Disorders-Drug Targets. 2025 Mar;25(2):E030724231543.
64. Tan E, Bundell C, Bahadori A, Needham M, Brusch A. Retrospective audit of 3-hydroxy-3-methyl-glutaryl-CoA reductase (HMGCR) antibody testing between 2015–2023 in Western Australia. Pathology. 2025 Feb 1;57:S91-2.
65. Tan E, Bundell C, Bahadori A, Needham M, Brusch A. Retrospective audit of 3-hydroxy-3-methyl-glutaryl-CoA reductase (HMGCR) antibody testing between 2015–2023 in Western Australia. Pathology. 2025 Feb 1;57:S91-2.
66. Pellejero-Sagastizábal G, Bulescu C, Gupta N, Jokelainen P, Gkrania-Klotsas E, Barac A, Goorhuis A, Jacob ST, Agnandji ST, Ntoumi F, Mora-Rillo M. Delayed correct diagnoses in emerging disease outbreaks: Historical patterns and lessons for contemporary responses. Clinical Microbiology and Infection. 2025 Apr 11.
67. Karachunski PI, Walk D. Neuromuscular Biopsy. InClinical Handbook of Neuromuscular Medicine 2025 Jan 2 (pp. 73-85). Cham: Springer Nature Switzerland.
68. Tan E, Bundell C, Bahadori A, Needham M, Brusch A. Retrospective audit of 3-hydroxy-3-methyl-glutaryl-CoA reductase (HMGCR) antibody testing between 2015–2023 in Western Australia. Pathology. 2025 Feb 1;57:S91-2.
69. Sharafeldin MA, Suef RA, Mousa AA, Ziada DH, Farag MM. Serum miRNA-101 expression signature as non-invasive diagnostic biomarker for Hepatitis C virus—associated hepatocellular carcinoma in Egyptian patients. Scientific Reports. 2025 Jan 3;15(1):645.

70. Sharafeldin MA, Suef RA, Mousa AA, Ziada DH, Farag MM. Serum miRNA-101 expression signature as non-invasive diagnostic biomarker for Hepatitis C virus—associated hepatocellular carcinoma in Egyptian patients. Scientific Reports. 2025 Jan 3;15(1):645.
71. Lauriero F, Vita CV, Perazzolo A, Sanseverino G, Moliterno E, Rovere G, Marano R, Natale L. Acute Myocarditis and Inflammatory Cardiomyopathies: Insights From Cardiac Magnetic Resonance Findings. Echocardiography. 2025 Feb;42(2):e70099.
72. Zhao Y, Hu Y, Wang Y, Qian H, Zhu C, Dong H, Hao C, Zhang Y, Ji Z, Li X, Chen Y. Cardiac fibroblast-derived mitochondria-enriched sEVs regulate tissue inflammation and ventricular remodeling post-myocardial infarction through NLRP3 pathway. Pharmacological Research. 2025 Apr 1;214:107676.
73. AL-Khikani FH, Ayit AS. Non-Bacterial Urinary Tract Infections: Unveiling a Hidden Challenge in Urology and Infectious Disease Research. World News of Natural Sciences. 2025;60:181-94.
74. de Vries LS, Volpe JJ. Viral, protozoan, and related intracranial infections. InVolpe's Neurology of the Newborn 2025 Jan 1 (pp. 1125-1208). Content Repository Only!.
75. Baek H, Yang SW, Kim S, Lee Y, Park H, Park M, Jeon BJ, Park H, Hwang HS, Kim JY, Kim JH. Development of Anti-Inflammatory Agents Utilizing DC-SIGN Mediated IL-10 Secretion in Autoimmune and Immune-Mediated Disorders: Bridging Veterinary and Human Health. International Journal of Molecular Sciences. 2025 Mar 5;26(5):2329.
76. Lauriero F, Vita CV, Perazzolo A, Sanseverino G, Moliterno E, Rovere G, Marano R, Natale L. Acute Myocarditis and Inflammatory Cardiomyopathies: Insights From Cardiac Magnetic Resonance Findings. Echocardiography. 2025 Feb;42(2):e70099.
77. Guo X, Zhang J, Huang M, Song C, Nie C, Zheng X, Wang S, Huang X. Systemic inflammation is associated with myocardial fibrosis in patients with obstructive hypertrophic cardiomyopathy. ESC Heart Failure. 2025 Feb;12(1):582-91.
78. Wang Z, Tang J, Shi Q, Fang L, Liu N, Zhang J. Persistent lipoprotein (a) exposure and its association with clinical outcomes after acute myocardial infarction: a longitudinal cohort study. Annals of Medicine. 2025 Dec 31;57(1):2454975.
79. Sorella A, Galanti K, Iezzi L, Gallina S, Mohammed SF, Sekhri N, Akhtar MM, Prasad SK, Chahal CA, Ricci F, Khanji MY. Diagnosis and management of dilated cardiomyopathy: a systematic review of clinical practice guidelines and recommendations. European Heart Journal-Quality of Care and Clinical Outcomes. 2025 Mar;11(2):206-22.
80. Del Mestre E, Paldino A, Pio Loco Detto Gava C, Gandin I, Gigli M, Stolfo D, Setti M, Severini GM, Spedicati B, Lenarduzzi S, Girotto G. Prediction and prognostic role of left ventricular systolic dysfunction in family screening for dilated cardiomyopathy and non-dilated left ventricular cardiomyopathy. European Journal of Heart Failure. 2025 Apr 15.
81. Shen Y, Fan N, Ma SX, Cheng X, Yang X, Wang G. Gut Microbiota Dysbiosis: Pathogenesis, Diseases, Prevention, and Therapy. MedComm. 2025 May;6(5):e70168.
82. Barik M,Bajpai M, Das RR, Panda SS. Study of environmental and genetic factors in children with craniosynostosis: A case-control study. J PediatrNeurosci. 2013; 8:89–92.
83. Barik M and Verma AK. "Home Made Herbal Sanitizer (HHS), Homemade Potential Herbal Medicine (HPHM) May Helpto Fight against Covid-19, SARS-CoV-2 and Boost the Immunity: A Cost-Effectiveness Approach for Common Public". Acta Scientific Medical Sciences 4.11(2020).
84. Barik M. Starvation Stress Induced Cardiac Diseases (Ssicds) and Activity of the Hepatic Enzymes: An Innovative Inventionthrough Experimental Conditions. Adv Res GastroenteroHepatol 2018; 9(4): 555769.
85. Barik M. (2020). "Prognostic and Diagnostic Value of COVID-19". A Text-Book of the COVID- SARS-2: Guidelines and Protocol Development. Mahi International Publisher, Ahmadabad, India.
86. Kapoor PM,Barik M, Bhardwaj V, Taneja S, SethiBS.Recent Advances in Cardiopulmonary Resuscitation from 2010 to 2015. Clinical Simulation inMedicine (For all Examinations in Cardiology, Critical Care, Anesthesia and Pulmonary Medicine).2016;1:272-297.
87. Barik M et al. Role of MicroRNA in Cardiac Anaesthesia: An Innovative Consequences and New Posibility. Anals of Cardiac Anaesthesia.2017;20 (2):1-2.
88. Barik M. Metabolic Consequence of Short Term Starvation in Gastrointestinal Diseases: A Mini Review.Adv Res Gastroentero Hepatol.2017;3: 55561617.
89. Barik M,Mallik KC, Biswas S. "Strengthening the Health Care System (HCS) in Jaharkhand State at the Primary, Secondary and Tertiary Health Care Level: Need to be Revisilent".Acta Scientific Medical Sciences.2020; 4.6:28-31.
90. Barik M (2020) "Guidelines and Protocol Development for Molecular Targeted Therapy (MMT) for COVID-19 Patients". A Text-Book of the COVID-SARS-2: Guidelines and Protocol Development. Mahi International Publisher, Ahmadabad, India.
91. Barik M. Role of Starvation in Human Body Metabolism and Its Effect on Tissue Specific. International Journal of Medical Toxicology & Legal Medicine.2015; 18:31-35.
92. Barik M, Kumar A, Rathore P, Kumar A, Kumawat G, Kumar V, KanaugiaRR.Recentadvances Application in Diffuse Axonal Injury Imaging (Daii) and Future Prospective: A Comparative Study with Systematic Review of literature.Journal of Forensic Medicine and Toxicology.2015;32(1):48-53.
93. Barik M, Mishra PR, Ray B.Effect of nimodipine on morphine-related withdrawal syndrome in rat model: An observational study.Journal of Pediatric Neurosciences.2017;55(3):56.
94. Patnaik KC, Barik M. Effects of cadmium chloride on the ascorbic acid metabolism in tissues of Indian toad,Bufomelanostictus.Nature Environment & Pollution Techonology.2004;8(4):273-279.
95. Barik M et al. Effects of cadmium chloride on calcium and phosphorus turn over in the tissues of Bufomelanostictus.J Ecobiol.2006;8(4):371-377.
96. Sun Y, Gan Z, Liu S, Zhang S, Zhong W, Liu J, Huang X, He W, Zhong H, Cao Q. Metagenomic and Transcriptomic Analysis Reveals Crosstalk Between Intratumor Mycobiome and Hosts in Early-Stage Nonsmoking Lung Adenocarcinoma Patients. Thoracic Cancer. 2025 Jan;16(2):e15527.
97. Vallianou N, Kounatidis D, Christodoulatos GS, Panagopoulos F, Karampela I, Dalamaga M. Mycobiome and cancer: what is the evidence?. Cancers. 2021 Jun 24;13(13):3149.
98. Gamal A, Elshaer M, Alabdely M, Kadry A, McCormick TS, Ghannoum M. The mycobiome: cancer pathogenesis, diagnosis, and therapy. Cancers. 2022 Jun 10;14(12):2875.
99. Gamal A, Elshaer M, Alabdely M, Kadry A, McCormick TS, Ghannoum M. The mycobiome: cancer pathogenesis, diagnosis, and therapy. Cancers. 2022 Jun 10;14(12):2875.
100. John D, Yalamarty R, Barakchi A, Chen T, Chakladar J, Li WT, Ongkeko WM. Transcriptomic analysis reveals dysregulation of the mycobiome and archaeome and distinct oncogenic characteristics according to subtype and gender in papillary thyroid carcinoma. International Journal of Molecular Sciences. 2023 Feb 5;24(4):3148.
101. Sun YY, Liu NN. Mycobiome: an underexplored kingdom in cancer. Microbiology and Molecular Biology Reviews. 2025 Mar 14:e00261-24.
102. Mou W, Deng Z, Zhu L, Jiang A, Lin A, Xu L, Deng G, Huang H, Guo Z, Zhu B, Wu S. Intratumoral mycobiome heterogeneity influences the tumor microenvironment and immunotherapy outcomes in renal cell carcinoma. Science Advances. 2025 Apr 9;11(15):eadu1727.
103. Barik M, Bajpai M, Malhotra A, Samantary J, Dweidi SN. Potential therapeutic strategies and its application in correcting birth defects, craniosynostosis, neurological disorders and other diseases. J MetabSyndr. 2013; 2:122.
104. Raza A, Uddin J, Akbar S, Alarfaj FK, Zou Q, Ahmad A. Comprehensive analysis of computational methods for predicting anti-inflammatory peptides. Archives of Computational Methods in Engineering. 2024 Aug;31(6):3211-29.
105. Barik M,Meher SK.USA: Studium Press LLC; 2014. Role of Systems Biology in Starvation and Anti-ageing for Public Health Using an Algorithm of Computational Biology and Molecular Medicine. Biotechnology: Applied Synthetic Biology; pp.165-189.
106. Barik M,Bajpai M, Malhotra A, Samantaray JC, Dwvedi SN.USA: Studium Press LLC; 2014.Gene Therapy in Correcting Birth Defects and Neurological Disorders. Biotechnology, gene and protein engineering; pp. 149–158.
107. D'souza RS, Her YF, Hussain N, Karri J, Schatman ME, Calodney AK, Lam C, Buchheit T, Boettcher BJ, Chang Chien GC, Pritzlaff SG. Evidence-based clinical practice guidelines on regenerative medicine treatment for chronic pain: a consensus report from a multispecialty working group. Journal of pain research. 2024 Dec 31:2951-3001.
108. Levy L, Moshkelgosha S, Huszti E, Wang S, Hunter S, Zhang CY, Ghany R, Keshavjee S, Singer LG, Tikkanen J, Juvet S. Bronchoalveolar lavage cytokine-based risk stratification of clinically-stable lung transplant recipients with undefined rejection: Further insights from a follow-up investigation. The Journal of Heart and Lung Transplantation. 2025 Apr 1;44(4):634-42.