Letters to the Editor

[The Editor is not responsible for the views expressed by the correspondents]

Uncontrolled and Resistant Hypertension : A major challenges for Clinicians

SIR, — I am writing to express my appreciation for the recent publication of the Resistance Hypertension Study in your esteemed journal, JIMA cited as Bhuvaneswari K, Jegatheeswari Murugesan, Mohamed Musthafa S, Aathira S. Drug Utilization in Resistant Hypertension. *J Indian Med Assoc* 2023; **121(12):** 21-3[1]. This is good efforts not only contributed to our understanding of resistant hypertension but also holds potential implications for public health.

Resistant hypertension is a common clinical problem faced by both primary care clinicians and specialists. The exact prevalence of resistant hypertension is unknown. In various studies its prevalence has been reported to be 20% to 30% of study participants. The diagnosis of Resistant Hypertension (RHT) requires use of good blood pressure measurement technique to confirm persistently elevated blood pressure levels. Patients with RHT typically have higher prevalence of target organ damage and worse cardiovascular prognosis than those with non RHT.

Study conducted by us and published in JAPI revel that approximately 19.51% HT patients were on ≥ 3 anti-hypertensive medications and received ARB + CCB + Diuretics. Diabetes and dyslipidaemia were the major comorbidities reported in patients with uncontrolled and resistant hypertension[2].

The prevalence mentioned by author in this is quite low ie, 3.45%. the reason could be study was conducted at one particular location[1]. The combination used predominantly was ACE inhibitor with a Diuretic and Beta blocker. Co-morbidity observed were coronary artery disease (64%), Diabetes (57%), Dyslipidemia (22%), CKD (23%), Hypothyroidism (10%)[1].

I our study finding are similar, but most of resistant hypertensive patients were on ≥ 3 antihypertensive medications and received ARB + CCB + Diuretics as the most preferred anti-hypertensive combination therapy. Diabetes and dyslipidaemia were the major comorbidities reported in patients with uncontrolled and resistant hypertension[2].

As per WHO, 1.28 billion adults aged 30-79 years worldwide have hypertension, two-thirds living in low- and middle-income countries. 46% of adults with hypertension are unaware that they have hypertension. Less than half of adults with hypertension are diagnosed and treated. **Approximately 1 in 5 adults (21%) with hypertension have it under control.** Hypertension is a major cause of premature death worldwide. One of the global targets for noncommunicable diseases is to reduce the prevalence of hypertension by 33% between 2010 and 2030[3].

Various guidelines like NICE, ESC, WHO, ESH, JNC, JSG Indian guidelines are available, wanted to highlight WHO 2021 guidelines which are simpler and easy to follow.

The 2021 WHO hypertension guideline provided the most current and relevant evidence-based global public health guidance on the initiation of treatment for hypertension in adults[4].

The guideline makes eight recommendations[4] :

BP threshold for starting drug treatment	Those with diagnosis of HTN and BP of ≥140/≥90 mmHg Those with CVD and SBP ≥130 139 mmHg	Recommendation: strong Evidence: moderate–high certainty
	Those without CVD but with high CVD risk, diabetes, CKD and SBP ≥130 139 mmHg	Recommendation: conditional Evidence: moderate–high certainty
Whether screening and assessment are needed before treatment is started	Obtain tests to screen for comorbidities and conduct CV risk assessment but only if it doesn't t delay treatment	Recommendation: conditional Evidence: low certainty
Which drug(s) to prescribe	Any of these drug classes diuretics/ACEi /ARB/CCBs	Recommendation: strong Evidence: high certainty
Combination therapy	To improve adherence and persistence combination therapy recommended. preferably in a single pill	Recommendation: conditional Evidence: moderate certainty
BP target for control of HTN	140/90 mmHg in those without comorbidities SBP 130 mmHg in those with CVD	Recommendation: strong Evidence: moderate certainty
	SBP 130 mmHg in those with high CVD risk, diabetes and CKD	Recommendation: conditional Evidence: moderate certainty
Follow up intervals	Monthly follow up until patient reaches target BP.	Recommendation: conditional Evidence: low certainty

Causes of resistant hypertension specially in Indian patients are poor adherence to antihypertensive therapy, irregular patient follow-up, lack of patient counselling, suboptimal antihypertensive therapy including inappropriate selection of anti-hypertensive combinations as well as clinician inertia, a failure to change or increase dose regimens in order to obtain adequate treatment of poorly controlled hypertension despite awareness of the condition, Poor adherence to lifestyle and dietary approaches such as a reduced sodium intake, long term consumption of certain medications such as steroids, NSAIDs etc.

Role of Ambulatory Blood Pressure Monitoring (ABPM) in Resistance hypertension.

Ambulatory Blood Pressure Monitoring (ABPM) can be used in certain cases as ABPM provides a more comprehensive and accurate assessment of blood pressure throughout the day and night, capturing variations that may be missed during clinic measurements. This helps in obtaining a more reliable picture of blood pressure control. It also helps to differentiate between true resistant hypertension and "white coat hypertension". ABPM allows healthcare providers to assess the effectiveness of prescribed medications and make adjustments as needed. This is

particularly important in resistant hypertension cases where finding the right combination of drugs can be challenging. Resistant hypertension often involves elevated blood pressure during the night. ABPM helps identify nocturnal hypertension, which is associated with an increased risk of cardiovascular events. In summary, Ambulatory Blood Pressure Monitoring is a valuable tool in the management of resistant hypertension. It assists healthcare providers in making accurate diagnoses, tailoring treatments and monitoring the effectiveness of interventions, ultimately improving patient outcomes.

How to achieve better BP goals in difficult to treat hypertension.

Resistant hypertension is always multifactorial in etiology. Lifestyle changes, including weight loss; regular exercise; ingestion of a high-fiber, low-fat, low-salt diet should be encouraged. weight loss should be promoted in any patient with resistant hypertension who is either obese oroverweight. The advantage of dietary salt reduction is well demonstrated in hypertensive patients with approximate reductions in systolic and diastolic blood pressure of 5 to 10 and 2 to 6 mm Hg, respectively. Ingestion of a diet rich in green leafy vegetables fruits and; low-fat dairy products, potassium, magnesium, and calcium; and low saturated fats reduced systolic and diastolic blood pressure by approximately 11.4 and 5.5 mm Hg[5].

Initiate with Combination therapy: Initiation with FDC of preferred anti-hypertensive medications, this will help to achieve BP goal faster, overcome therapeutic inertia, reduces pill burden, also to great extend reduces BP variability. Right selection of anti-hypertensive medications from different class can be considered. Adding mineralocorticoid receptor antagonists provide significant antihypertensive benefit to existing multidrug anti-hypertensive treatment regimens.

The protective measures to be taken to control hypertension includes reduction of physician's inertia, diet and physical activity, regular patient follow-up with BP measurements and counselling, and the improvement in patient adherence.

Efforts to address resistant hypertension in India should focus on comprehensive lifestyle interventions, improved healthcare infrastructure, and increased awareness about the importance of blood pressure control.

It is crucial to emphasize the societal impact of such research, considering the increasing prevalence of hypertension globally. The Resistance Hypertension Study has the potential to guide medical practitioners in optimizing treatment strategies and improving patient outcomes. Additionally, it lays a foundation for future investigations and advancements in the management of hypertension.

I believe that featuring this study in your journal contributes significantly to the dissemination of knowledge in the medical community. The clarity of presentation and the thorough discussion of results make the study accessible to a wide readership, including healthcare professionals, educators, and policymakers.

In Conclusion, I would like to express my gratitude for the valuable contribution of the Resistance Hypertension Study to the scientific literature. By highlighting its importance, I hope to further encourage the exploration of innovative approaches to address the challenges posed by resistance hypertension.

Thank you for your commitment to advancing medical knowledge, and I look forward to reading more scientific studies in your esteemed journal.

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Simplifying Day-to-Day Practice with AI

SIR, — Artificial Intelligence (AI) has emerged as a transformative force in healthcare and medical education. In healthcare, integration of rule-based expert systems and machine learning through AI enhances clinical decision-making, minimising errors and optimising safety[1]. Open Evidence and Google MedPaLm are generative AI specialised in aligning Large Language Models (LLMs) with the medical domain. LLMs are trained on extensive data, including books, articles, and codes, enabling them to comprehend and generate human-like text. Open Evidence scored 90% on the US Medical Licensing Exam, showcasing its exceptional expertise[2]. The impact of AI extends to patient and clinician interaction through resources like the ADA Health app, a telemedicine chatbotthat helps patients identify symptoms to make informed decisions about seeking the right medical care. Increasing integration of big data and AI in professional practice seeks a reboot of medical education and curriculum shift[3]. Immersive learning tools like Virtual Reality and Augmented Reality, exemplified by simX in anatomy dissection halls, contribute significantly to this educational transformation, providing students with interactive experiences beyond conventional methods. AI has emerged as a boon to simplify the administrative aspects of healthcare. Automation tools such as Calendly, Time-tap, and 10-8 can be used to streamline out patient

tasks, thereby allowing practitioners to focus more on patient care.

Advanced AI in healthcare and medical education leads to holistic progress in the field. These cutting-edge developments improve medical outcomes and equip future medical professionals with the skills to navigate modern healthcare.

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Rifampicin induced Thrombocytopenia : a rare complication

SIR, — Thrombocytopenia is a condition of decreased platelet count less than 1,50,000/mm^{3}. It can be due to decreased platelet production from bone marrow, sequestration and increased platelet destruction. The decrease in platelet numbers can lead to variety of conditions and risks ranging from mild epistaxis to life threatening bleeding like hematuria and bleeding per rectum. Drug induced Thrombocytopenia is a life-threatening, under-recognised condition, and is often a diagnostic challenge.[1] Rifampicin induced thrombocytopenia was first reported in 1970[2]. The drug classes that are most often associated with drug-induced immune thrombocytopenia are cinchona alkaloid derivatives (quinine, quinidine), sulphonamides, NSAIDs, anticonvulsants, disease modifying antirheumatic drugs and diuretics[3].

We report a case of a 72-year-old female who presented to another hospital with an on & off history of fever for 15-20 days, headache & vomiting for 3 days. On clinical examination, neck rigidity was present and Kernig's sign was positive. CSF examination was done and it showed 200 cells (90% lymphocytes & 10% neutrophils). The glucose was 21 mg/dl, protein was 147 mg/dl. ADA was positive. Serum electrolytes showed hyponatremia (Na$^+$:120 meq/L). At that time the platelet count was 2,53,000/mm^{3}. Other electrolyte values, RFT,

LFT were found within normal limits. The diagnosis of Tubercular meningitis was made and the patient was started on anti-tubercular therapy category 1. After around 3 weeks of ATT, the patient developed Hematuria and generalized body purpura. Followed by which patient presented to our hospital.

The patient was admitted, urgent complete blood count was sent, and it showed platelet counts of 5000/mm^{3}. Urgent 4 units of random donor platelets were arranged and transfused. On repeat complete blood counts the platelet count was found 71000/mm^{3}. But next day the platelet count dropped to 4000/mm^{3}. Again 4 units of RDPs were transfused, platelet count reached to 56000/mm^{3}. Again, the next day it dropped to 7000/mm^{3}. Then ATT induced thrombocytopenia was suspected. ATT was stopped, 1unit of SDP was transfused, within 3 days the platelet count of the patient increased to 278000/mm^{3}. ATT was stopped for 7 days and reintroduced again one by one. First ethambutol 800 mg/day was added for 5 days, CBC was done after 5 days it showed platelet count 441000/mm^{3}, the ethambutol was continued. Then pyrazinamide 1250 mg/day was added, and after 5 days CBC was repeated, it showed platelet count of 478000/mm^{3}. There was no decrease in platelet counts after adding two drugs, so they were continued. Third drug isoniazid 300 mg/day was added after 10 days and again after 5 days CBC was repeated and it showed platelet count of 453000/mm^{3}. All the three drugs were continued. Rifampicin was added after 15 days, for 3 days, CBC was repeated and it showed platelet count of 80000/mm^{3} (thrombocytopenia). Rifampicin was stopped immediately. It was removed from the regimen and the patient was treated with ethambutol, isoniazid, pyrazinamide, streptomycin and steroids. Platelet count became normal during the follow up. No further clinical or laboratory abnormalities were found during the follow up.

Conclusion : Our case highlights this rare occurrence of rifampicin induced acute thrombocytopenia. Rifampicin is an essential component of the anti-tubercular regimens generally well tolerated. But on rare occasions it can cause such life-threatening adverse reactions like thrombocytopenia. Therefore, the possibility of such adverse reactions should be kept in mind during anti tubercular therapy.

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