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Research Article

PRESCRIPTION PATTERN OF DRUGS USED IN MANAGEMENT OF RHEUMATOID ARTHRITIS IN A TERTIARY CARE HOSPITAL – A RETROSPECTIVE STUDY

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Abstract: This study was conducted about the prescription pattern of drugs used in rheumatoid arthritis includes obtain information about various anti-rheumatoid drugs prescribing pattern, to calculate the average number of anti-rheumatoid drugs per prescription and to find out the drug-drug interaction present in the each prescription. The study is conducted in the orthopaedics department of VMKVMCH in Salem district, Tamil Nadu between months of November 2014 to April 2015. The data is collected from the case records and the information is recorded on age, gender, associate illness, articular manifestations, laboratory measurements and study of prescription, which include DMARDS, STEROIDS, NSAIDs and the type of combinations. The results showed that, RA was commonly seen in female patients. Out of 150 patients 13(8.6%) patients were males and 137(91.3%) patients were females. The present study also revealed that RA commonly occurred in average age of 50.07±10.49. Combination therapy was preferred over monotherapy in the management of RA, in that 3 drug and 5 drug therapy was most preferred over other combinations. The overall drug usages in this study revealed that a total of 552 drugs were prescribed. Out of which, Hydroxychloroquine was most prescribed [111(20.10%)] followed by Paracetamol in [103(18.75%)], Diclofenac in [88(15.94%)], sulfasalazine in [86(15.57%)], methotrexate in [41(7.42%)], methylprednisolone in [40(7.24%)], Aceclofenac in [21(3.80%)], tramadol and the combination of Seratopeptidase in [17(3.07%)], prednisolone in [13(2.3%)], sodium chondroitinsulfate and sodium hyalourate in [4(0.7%)], Ibuprofen, Chloroquine and indomethacin in [2(0.3%)], patient. Among this 150 patients, 15 cases with co-morbidities like hypertension in 9(60%), diabetes in 4(26.66%), and asthma in 2(13.34%) patients Out of 150 cases maximum number of interactions occurred with 5 drug therapy [88(47.06%)] and least with 2 drug therapy Out of 150 patients the most of the interactions were occurred in the 5 drugs therapy and least with 2 drug therap. Hence it also proves that whenever the Polypharmacy is there, it also increases the chance of drug-drug interactions.

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INTRODUCTION:

Drug utilization research was defined by WHO in 1977 as the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences. The principle aim of drug utilization research is to facilitate the rational use of drugs in populations. For the individual patient, the rational use of a drug implies the prescription of a well-documented drug at an optimal dose, together with the correct information, at an affordable price. Without knowledge of how drugs are being prescribed and used, it is difficult to initiate a discussion on rational drug use or to suggest measures to improve prescribing habits. Rheumatoid arthritis (RA) is a devastating inflammatory arthritis affecting up to 1% of the developed world. Without aggressive, early medical treatment with disease-modifying antirheumatic drug (DMARDs), severe damage can occur. However, many patients do not end up in this trajectory early enough to benefit maximally from rheumatology care. Furthermore, rheumatology referral was delayed especially in patients of older age, lower socioeconomic status, and low proximity to specialty care [1]. Drug utilization research can increase our understanding of how drugs are being used. It can be used in the application of quality indicators to patterns of drug utilization [2]. Drug prescribing studies aim to provide feedback to the prescriber and to create awareness among them about rational use of medicines [3].

The other form inflammatory arthritis—results from swelling in the joints. Rheumatoid arthritis is a common type of inflammatory arthritis⁴. Little is known about the current disease-modifying antirheumatic drug (DMARD) preferences of British rheumatologists. Sulphasalazine was the agent of first choice for British rheumatologists in a previous UK survey, but currently methotrexate is widely regarded as the standard against which other DMARDs should be compared. Several recent surveys, from North America, have shown that combinations of DMARDs are preferred in contemporary practice [5].

Recent analysis of Quebec administrative data revealed that of all new-onset or suspected RA cases in the year 2000, only a small proportion (just over one quarter) were referred to relevant specialists. Furthermore, rheumatology referral was delayed especially in patients of older age, lower socioeconomic status, and low proximity to specialty care. The cause of RA is unknown. The combination of genetic susceptibility with an as-yet-unidentified inciting event (or events) leads to disease expression. The concordance of RA in identical twins is reported

as 15% to 30%, suggesting that nongenetic factors have a predominant impact on disease expression. However, the association of HLA-DR with RA is well established. There is an increased relative risk of RA of about 4 to 5 in patients with this allele.⁶ Treatment should normally be initiated with the least expensive drug (taking into account administration costs, required dose and product price per dose). This may need to be varied in individual cases due to differences in the mode of administration and treatment schedules

MATERIALS AND METHOD:

The study is conducted in the orthopaedics department of VMKVMCH in Salem district, Tamil Nadu, between months of November 2014 to April 2015.

- The age and gender data including co-morbidities are collected from the prescription.
- The data collected from orthopaedics department through designed proforma were assessed.
- A separate data entry proforma was designed. The proforma format has been designed to collect the details such as patient name, age, gender, DOA, DOD, and medication details.
- Proforma 1- Patient details & treatment chart

RESULTS AND DISCUSSION:**Most Commonly Prescribed Class of Drugs during the Study Period (N=150)**

The most commonly prescribed class drugs for RA in our hospital include DMARDS, NSAIDS, Simple analgesics, Corticosteroids, Uricosuric acid. DMARDS was the most commonly prescribed drugs in the study population in the hospital. The data were shown in Table.No.1 and Figure.No.1

Table 1: Most Commonly Prescribed class Drugs during the Study Period

Class of Drugs	Number of Drugs Prescribed	Percentage
DMARDS	240	43.48%
NSAIDS	131	23.74%
Simple analgesic	103	18.65%
Corticosteroids	53	9.61%
Opioid analgesic	17	3.07%
Uricosuric acid	8	1.45%
Total	552	100

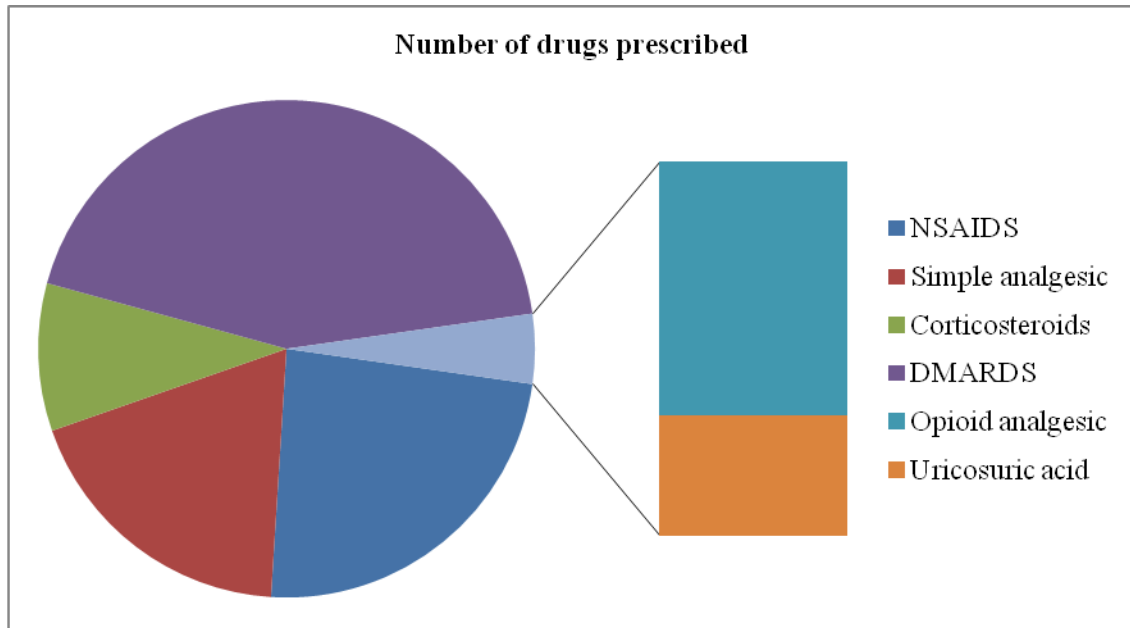


Fig 1: Most commonly Prescribed class Drugs during the Study Period

Most Commonly Prescribed Anti-rheumatoid Drugs

Out of 150 patients the most commonly prescribed classes of anti-rheumatic drugs were

Hydroxychloroquine [111(20.11%)] followed by Paracetamol [103(18.66%)]. The data were shown in Table.No.2 and Figure.No.2.

Table No: 2 most commonly prescribed Anti-rheumatoid drugs.

Drug name	Number of prescriptions	Percentage (%)
Hydroxychloroquine	111	20.11%
Paracetamol	103	18.66%
Diclofenac	88	15.94%
Sulfasalazine	86	15.57%
Methotrexate	41	7.42%
Methyl prednisolone	40	7.24%
Aceclofenac	21	3.80%
Seratopeptidase	17	3.08%
Tramadol	17	3.07%
Prednisolone	13	2.36%
Sodium chondroitin sulphate	4	0.73%
Sodium hyalourate	4	0.73%
Chloroquine	2	0.37%
Ibuprofen	2	0.37%
Indomethacin	2	0.37%
Aspirin	1	0.18%
Total	552	100

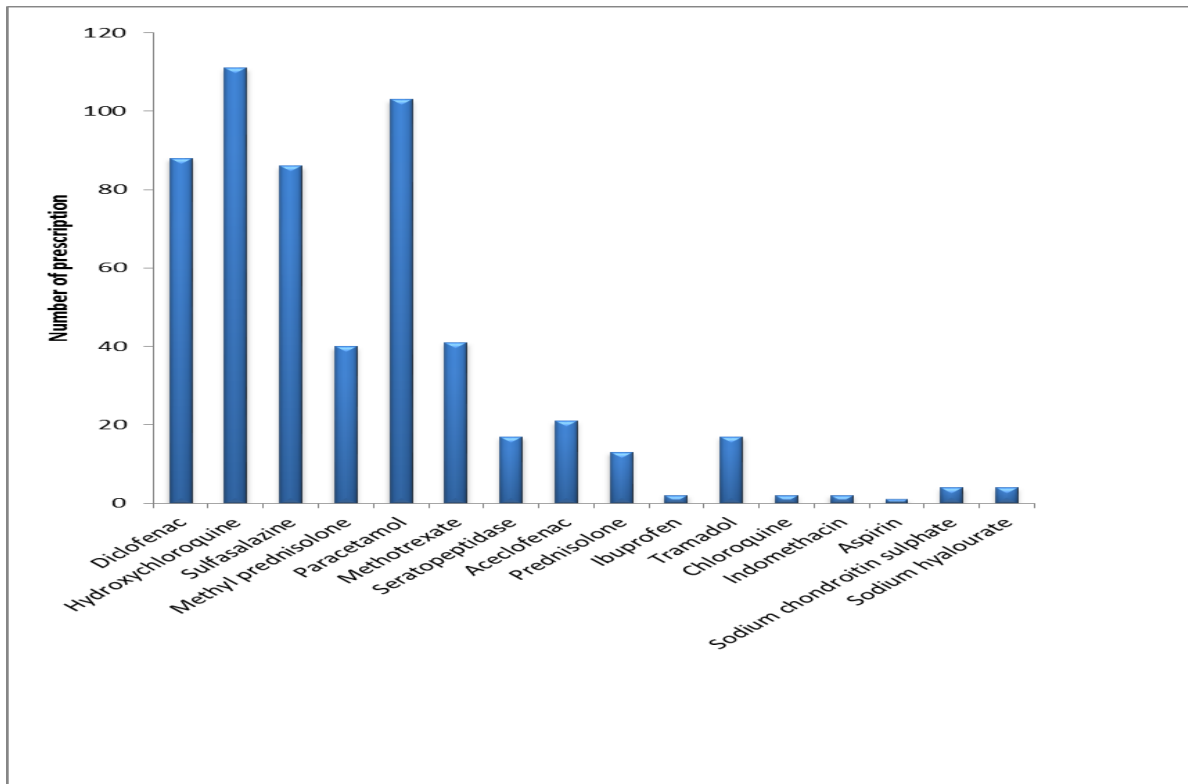


Fig 2: Most Commonly Prescribed Anti-Rheumatoid Drugs

Co- Morbid Conditions Prevalent In Rheumatoid Arthritis(n=150)

Co- morbid conditions that are prevalent in rheumatoid arthritis were found out. Out of 150 cases 15 cases were with comorbidity, diseases that accompanied with RA were Hypertension, Diabetes, Asthma. They were clearly indicated in table.No.3 and figure.No.3.

Details of Drug-Drug Interactions

Out of 150 patients, 221 interactions were found. In that 44 interactions between Sulfasalazine and prednisolone followed by 39 interactions between Diclofenac and Sulfasalazine. The data were shown in Table.No.4 and Figure.No.4.

Table 3: Co- Morbid Conditions Prevalent In Rheumatoid Arthritis(n=150)

Co-Morbidities	No.of Prescriptions	Percentage
Hypertension	9	60%
Diabetes	4	26.66%
Asthma	2	13.34%
Total	15	100%

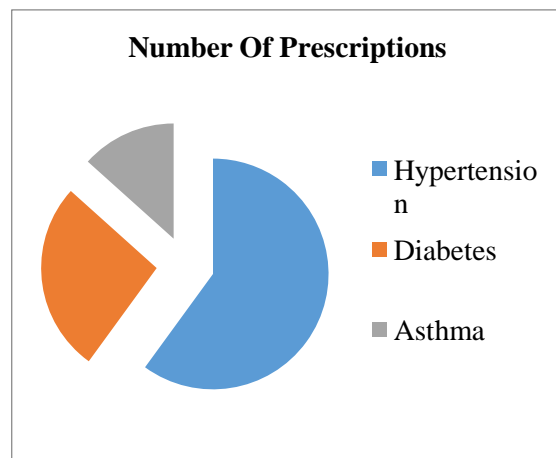


Fig 3: Co- Morbid Conditions Prevalent In Rheumatoid Arthritis(n=150)

Table: 4 Details of Drug-Drug Interactions:

Drug Interactions	Number of Interactions	Percentage (%)
Sulfasalazine *Prednisolone	44	19.90
Diclofenac *Sulfasalazine	39	17.64
Hydroxychloroquine*Methotrexate	31	14.03
Diclofenac *Methotrexate	25	11.33
Diclofenac *Prednisolone	22	9.94
Sulfasalazine*Methotrexate	15	6.78
Folic acid *Methotrexate	10	4.52
Pantoprazole*Methotrexate	7	3.17
Sulfasalazine*Enalapril	3	1.36
Metformin *Prednisolone	3	1.36
Indomethacin*Sulfasalazine	3	1.36
Gelusil * Sulfasalazine	2	0.92
Diclofenac*Indomethacin	2	0.92
Indomethacin *Prednisolone	2	0.92
Clonazepam*Acetaminophen	1	0.45
Gelusil *Enalapril	1	0.45
Sulfasalazine*Atenolol	1	0.45
Amlodipine *Nifedipine	1	0.45
Atenolol*Nifedipine	1	0.45
Sertraline*tramadol	1	0.45
Aspirin*Methotrexate	1	0.45
Clopidogrel*Diclofenac	1	0.45
Aspirin*Sulfasalazine	1	0.45
Aspirin *Clopidogrel	1	0.45
Aspirin*Diclofenac	1	0.45
Indomethacin*Methotrexate	1	0.45
Methotrxate*Aceclofenac	1	0.45
TOTAL	221	100

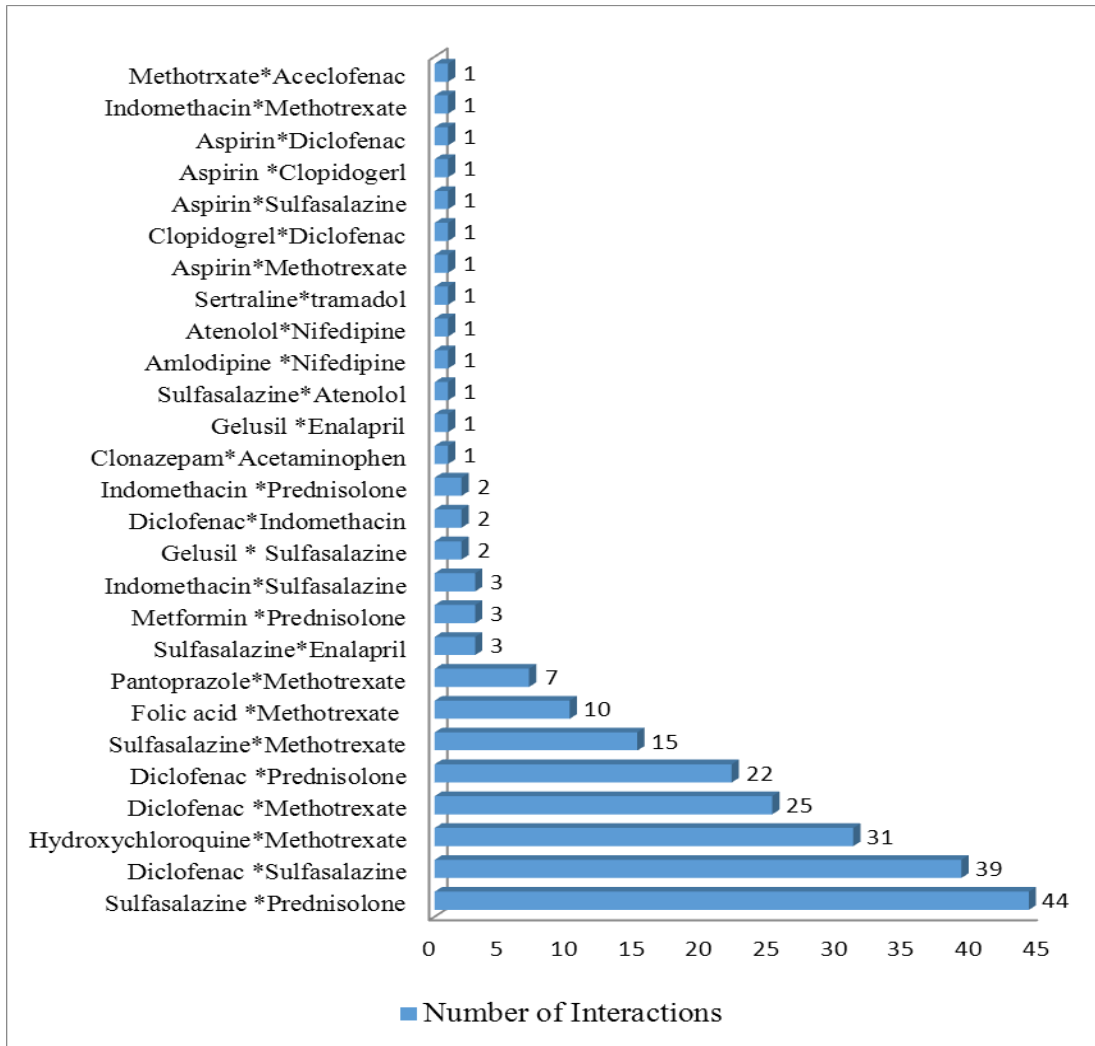


Fig: 4 Details of Drug-Drug Interactions

Details of Effects of Interactions

Out of 150 patients, 221 interactions were found. In those 129 interactions shows synergism and 92 antagonisms. The data were shown in Table.No.5 and Figure.No.5.

Table 5: Details of Effects of Interactions

Effect	Number of interactions	Percentage
Synergism	129	58.37%
Antagonism	92	41.63%
Total	221	100%

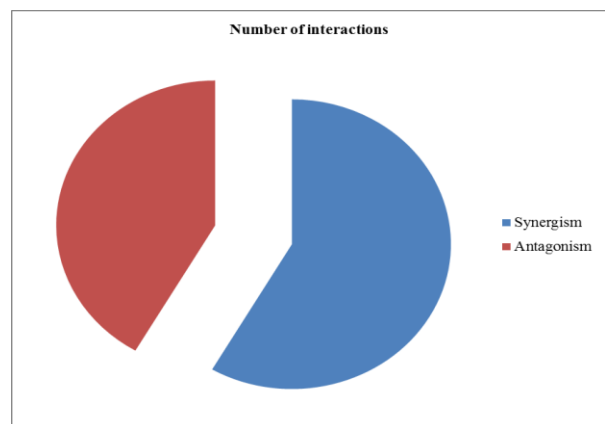


Fig: 5 Details of Effects of Interactions

Differentiation of Drug Interaction of anti-rheumatic Drugs with RA Drugs and Other Drugs

Out of 150 patients, 221 interactions were found. In that 187 interactions between anti-rheumatic drugs and 34 interactions between other drugs. The data were shown in Table.No.6 and Figure.No.6.

Table 6: Differentiation of Drug Interaction of Anti-rheumatic Drugs with RA Drugs and other Drugs

Interactions	Number of interactions	Percentage
Between anti-rheumatoid drugs	187	84.61%
Between anti-rheumatoid and other drugs	34	15.39%
Total	221	100%

Fig 6: .Differentiation of Drug Interaction of Anti-rheumatic Drugs with RA Drugs and other Drugs

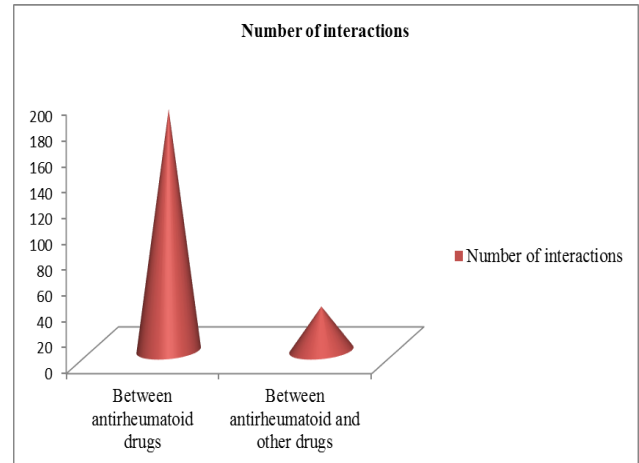
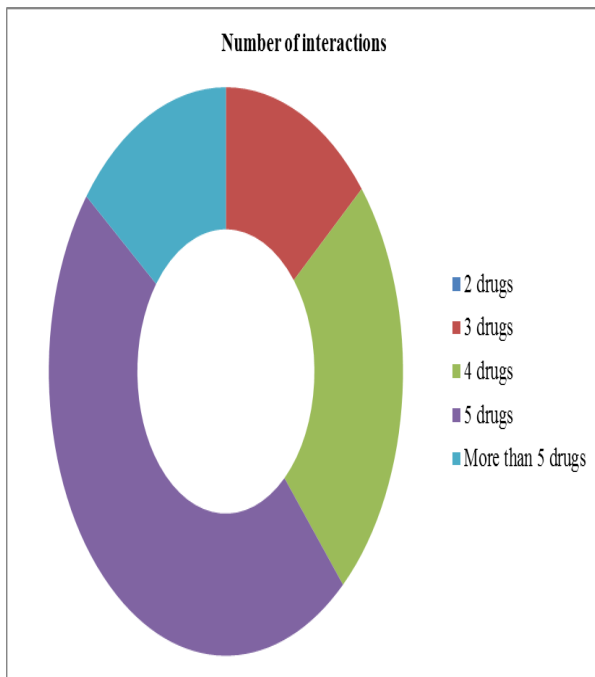


Fig: 7 Details of Interaction between Anti-rheumatic Drugs

Details of Interaction between Anti-Rheumatic Drugs

Out of 150 patients the most of the interactions were occurred in the 5 drugs therapy followed by 4 drug therapy, more than 5 drug therapy and 3 drug therapy. No interactions were found in 2 drugs. The data shows the maximum interactions were found at 5 drug combinations, i.e. 88 interactions. It also proves that whenever the polypharmacy is there it always increase the chance of drug-drug interactions. The data were shown in Table.No.7and Figure.No.7.

Table No: 7 Details of Interaction between Anti-rheumatic Drugs

Class of drugs	Number of interactions	Percentage
2 drugs	0	0
3 drugs	26	13.90%
4 drugs	46	24.60%
5 drugs	88	47.06%
More than 5 drugs	27	14.44%
Total	187	100%

CONCLUSION:

Whenever the Polypharmacy is there, it also increases the chance of drug-drug interactions. It can be concluded that, the utilization of DMARDS increased in patients with RA and the use of corticosteroids utilization decreased also the use of both NSAIDs and narcotics increased.

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