

# Gravel Passers

Pages with reference to book, From 272 To 275

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## Abstract

Eighty-two gravel passers were seen over a two-year period with normal IVPs having various complaints of haematuria, dysuria, lumbar pain and frequency. All had elevated serum uric acid and 24 hours urinary uric acid levels. Treatment with Allopurinol and high fluid intake relieved symptoms and lowering of serum and urinary uric acid in over 75% of patients. (JPMA 35 270, 1985).

## Introduction

Calculus disease is very common in Pakistan as we lie geographically in one of the strongest stone belts of the world.<sup>1</sup> (Figure 1)

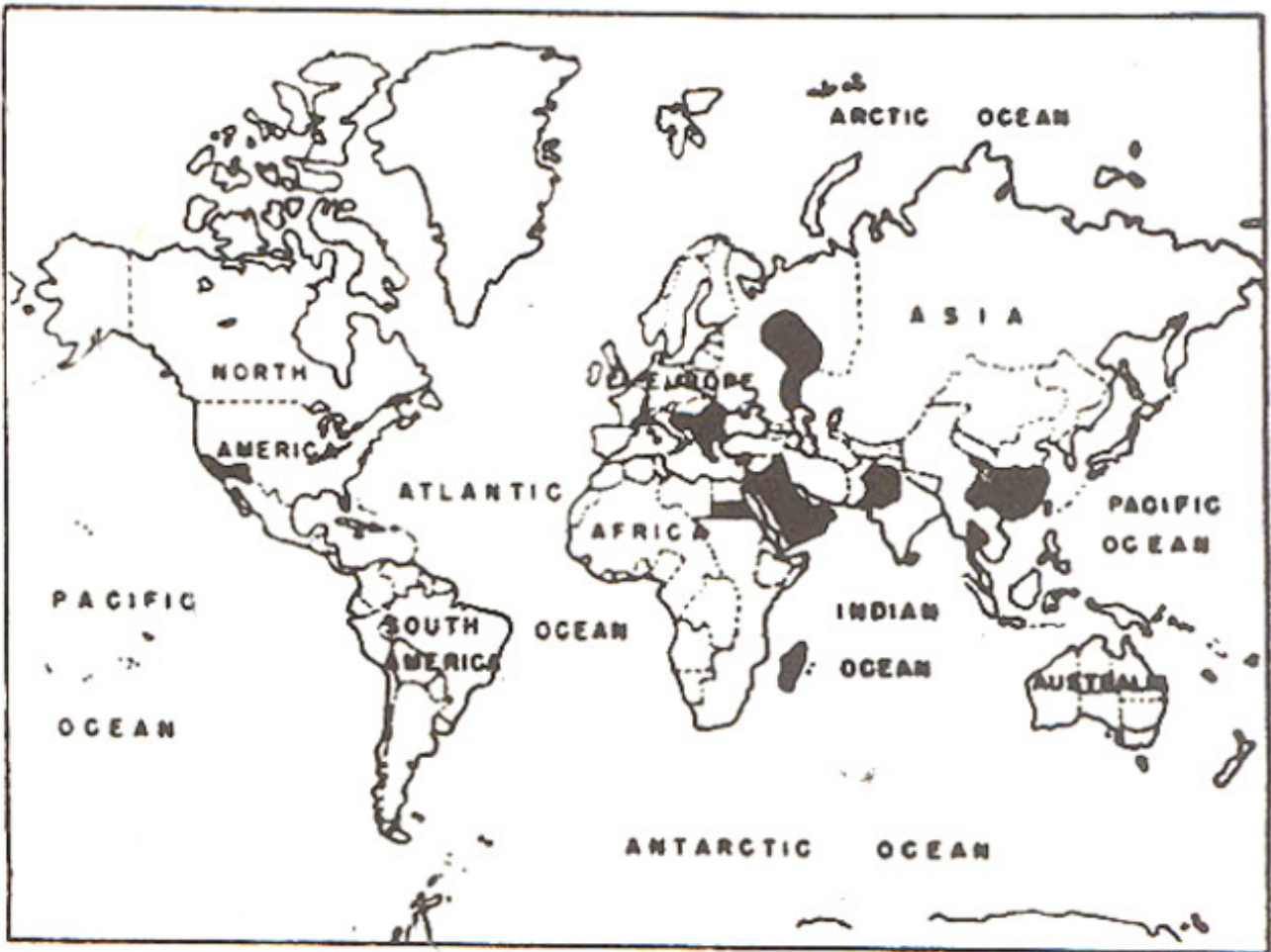


Fig. 1. World stone map showing selected areas with high incidence of urolithiasis.

Patients presenting with symptoms similar to calculus disease and a normal IVP are either not

investigated fully or are labelled wrongly as urinary tract infections. These patients have hyperuricemia and hyperuricosuria. They are "Gravel Passers". The purpose of this study was to see the role of uric acid in patients presenting with symptoms similar to calculus disease and their response to uric acid reducing drugs.

### **Material and Methods**

This is a retrospective study of eighty-two patients over a two-year period. The records of patients from Jan. 82 to Dec. 83 were studied and only those patients with complete metabolic evaluations with normal WPs and follow up were included. The data have been separated for age and sex group. Serum and urinary uric acid levels were estimated by Alkaline phosphotungstate method of Caroll.<sup>2</sup> Blood and urine analyses were carried out on all patients. Radiological examination included an WP Treatment given was Allopurinol 100-300mg. daily along with high fluid intake. At follow up symptoms were noted and serum and urinary uric acid levels estimated. Follow up ranged from 3 to 30 months.

### **Results**

**The male:** female ratio was 5 :3. with 50 males and 32 females having an age range between 14 yrs. to 65 yrs. (Mean age 39.5 yrs.) Table 1.

**Table-I**

Symptoms & Signs	Hyperuricemia & Hyperuricosuria.		Calculi	
	No.	%	No.	%
Lumbar pain	66	84.4	55	91.7
Haematuria:	40	48.7	47	78.3
h/o haematuria	22	26.8	21	35.
RBCs in urine	18	21.9	26	43.3
Dysuria	32	39	20	33.3
Frequency	25	30.5	16	26.6
<b>Total</b>	<b>82</b>	<b>60</b>		

Blood tests and other investigations of all patients were within normal limits and only those patients with normal IVPs were included in the study.

In over 70 per cent of the cases there was lowering of serum and Urinary Uric Acid levels with improvement in the symptoms, when treated with Allopurinol.

The symptomatology and signs are compared to patients with calculi over the same period in.

## Discussion

Hyperuricemia and/or Hyperuricosuria seem to produce symptoms which are similar to Calculus disease. Essentially these patients are gravel passers. They have colicky pain or dull ache in the lumbar region due to passage of crystals, which tends to produce haematuria in a significant number of patients. Routine investigations are usually normal and even Radiological examinations are negative. The presence of symptoms in these apparently normal patients should be assessed with biochemical analysis of serum and 24 hours urinary uric acid levels.

High uric acid levels in serum and in urine if treated may even help to prevent the formation of Calculi. The incidence of Calculus formation increases with the rise of serum uric acid levels. This is supported by the Framingham study<sup>4</sup> in regard to the incidence of kidney stones in patients with raised serum uric acid levels. This study has been underway for 12 years. They reported that stones occurred in 11 per cent of people with maximal serum uric acid levels of 7mg per 100ml or more, and in 12 per cent of patients with gouty arthritis. This incidence was 12.7 per cent of 212 men with serum uric acid between 7 & 8mg per cent, 22 per cent of 50 men with serum uric acid between 8 & 9mg per cent and in 40 per cent of patients with levels greater than 9mg per 100ml<sup>4-5</sup>

Therapy with high fluid intake and Allopurinol in a single daily dose gives good compliance and achieves a drop of serum and urinary uric acid levels in over 75 per cent of patients with improvement in their symptoms.

Allopurinol reduces the endogenous production of uric acid thereby reducing the amount of uric acid presented to the kidney regardless of the preexisting level of serum uric acid.<sup>6</sup> Allopurinol can sufficiently reduce the urinary uric acid concentration to render effective prophylaxis of uric acid stone formation regardless of other factors. It seems to have little toxicity. Its use is recommended for recurrent uric acid stone formers in general.<sup>6</sup> Similar results in lowering of serum and urinary uric acid have been reported by Smith et al where 85 patients treated with Allopurinol showed a lowering of mean pretherapy urinary uric acid pretherapy of 920mg/24 hours to 533mg/24 hours and serum uric acid mean of 8mg per 100ml to 5.4mg/100ml<sup>5-</sup>

The serum and urinary uric acid levels and the comparative mean levels in both sexes and in the various age 3 groups, in the study by Rehman and Naqvi are listed in Tables II and III.

**Table II****Serum Uric Acid Levels (mg %)**

Age	Mean value Healthy Male *	Male Patients Average value	Mean Value Healthy Female *	Female Patients Average value
10-19Yrs.	3.90 ± 1.02 ± 0.2	6.9	3.90 ± 0.99 ± 0.20	6.0
20-29 Yrs.	4.30 ± 1.18 ± 0.3	7.8	4.20 ± 1.0 ± 0.3	7.6
30-39 Yrs.	4.90 ± 1.18 ± 0.4	8.2	4.40 ± 0.8 ± 0.25	8.0
40-49 Yrs.	4.30 ± 1.31 ± 0.4	7.6	4.10 ± 0.9 ± 0.3	7.1
50-59 Yrs.	4.20 ± 1.35 ± 0.6	8.9	4.10 ± 0.9 ± 0.4	6.4
60-60+ Yrs.	3.74 ± 1.40 ± 0.6	7.8	4.00 ± 0.1 ± 0.07	7.7

\* Rehman & Naqvi Study.<sup>3</sup>

**Table III****Urinary Uric Acid (gm/24 hrs)**

Age	Mean value Healthy Male *	Male Patients Average value	Mean value Healthy Females *	Female Patients Average value
10-19 yrs.	0.46 ± 0.15 ± 0.03	0.99	0.50 ± 0.12 ± 0.03	0.86
20-29 Yrs.	0.56 ± 0.13 ± 0.03	0.89	0.46 ± 0.15 ± 0.04	0.74
30-39 Yrs.	0.55 ± 0.12 ± 0.04	0.95	0.47 ± 0.17 ± 0.05	0.84
40-49 Yrs.	0.51 ± 0.12 ± 0.04	0.81	0.51 ± 0.12 ± 0.04	0.90
50-59 Yrs.	0.48 ± 0.12 ± 0.05	1.01	0.45 ± 0.12 ± 0.05	0.90
60-60+ Yrs.	0.51 ± 0.17 ± 0.07	0.94	0.47 ± 0.04 ± 0.02	0.79

\* Rehman & Naqvi Study.<sup>3</sup>

No Alkalinization of urine or diet restrictions were followed.<sup>6</sup>Hyperuricemia and Hyperuricosuna is a treatable condition with simple dose therapy preventing the severe complications of stone formation and irreversible renal damage.

## References

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