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Research Article

EPIDEMOLOGY OF NEPHROLITHIASIS: AN INDIAN PRESPECTIVE

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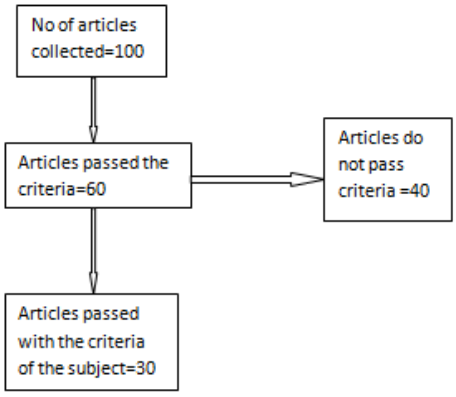
ABSTRACT

The purpose of this review to update the prevalence of nephrolithiasis in India. It is a review based on 85 articles collected from pubmed. With the changes in the socio economic conditions there will be a gradual change in the prevalence, incidence and distribution for age, sex, and type of urolithiasis in terms of both the site and the chemical-physical composition of calculi. The prevalence rate of the stone disease can be determined through a thorough understanding of aetiology, epidemology and pathogenesis of urinary tract stone disease is necessary so as to develop an effective medical prophylactic program. In India , about 12% of population is expected to have urinary stone, out of the total 50% may end their life with loss of kidneys or renal damage. Nearly 15% of population of northern India suffers from kidney stones. Urinary calculi occurances fewer in southern India.

INTRODUCTION

The most painful and the highest prevalence urological disorder of the urinary stystem is the nephrolithiasis.[1] Nephrolithiasis are small hard crystal formation from uric acid or calcium , magnesium, ammonium ion phosphate , calmate or oxalate ,which is found to be precipitate urine which will start to get build up inner surface of the kidney.[2] On an epidemological survey have been previously reviewed showing that in economically developed countries the prevelance rate ranged between 4 to 8%.[3]The geographic distribution of stone disease tends to roughly follow environmental risk factors, a higher prevelance of stone disease is found in hot arid, or dry climate such as mountains, deserts or tropical areas. The genetic factor and dietary influences will overweigh the geographical distribution pattern. The incidence of the stone disease is directly propotional to the body mass and body mass index.[4,5] Renal colic is one of the most important urologic indication for air evacuation. The trials are shown that insulin resistance induce defects in renal ammonium production[6,7] and the patients with stone disease and diabetes has more acidic urine[8]. The process of forming a kidney stone, a stone in the kidney (or lower down in the urinary tract). Kidney stones are a common cause of blood in the urine and pain in the abdomen, flank, or groin. Kidney stones occur in 1 in 10 people at some time in their life. The development of the stones is typically related to increased excretion of stone-forming components such as calcium, oxalate, urate or cystine.The pain with kidney stones is usually of sudden onset, very severe and colicky (intermittent), not improved by changes in position, radiating from the back, down the flank, and into the groin. Nausea and vomiting are common. The aim of this paper is to update previous epidemological reports of nephrolithiasis in India by reviewing the more recent literatures.

Systematic Review



DISCUSSION

The prevalence of urinary stones in Indian population is about 12% of the total population in which 50% may end up with loss of kidney or renal damage. In Northern region about 15% of the population suffer from renal stones . In Gujarat according

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to the Agakhan rural support programme , more than 4% people suffer from calculi problem . In Ahemedabad the prevelance rate of urolithiasis is 40 % and 12% had chronic renal failure and about 12.8% had LUTs secondary to benign prostastic hyperplasia . The high prevelance of the renal disorder is the inhabitants of the caracona taluk . In Tamil nadu the overall prevalence of urolithiasis 37% in female and 43% in male . In North western Karnataka 90% of the population suffer from nephrolithiasis and in south coastal Maharashtra 93.6% and in Goa 62.7% suffer from renal stone.

Table 1 Combined data with percentage and aetiology of nephrolithiasis

State	percentage	Aetiology	Reference
Maharashtra	5.4%	Rice and fish	[9]
Goa	37.3%	Red meat	[10]
Karnataka	10%	Global climate change	[11]
Tamil Nadu	37% in Female, 43% in male	Type 2 DM, obesity, high temperature	[12],[13]
Kerala	15%	Poor glycemic control	[14]
Gujarat	40.9%	Secondary to benign prostatic cancer.	[15]

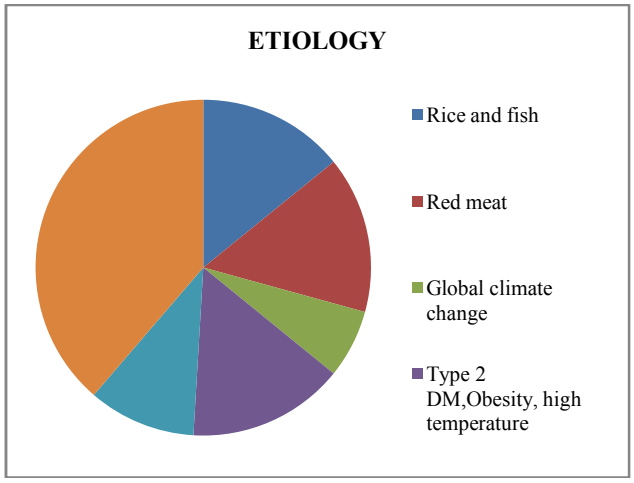

Fig 2 Aetiology of urinary stones on different states

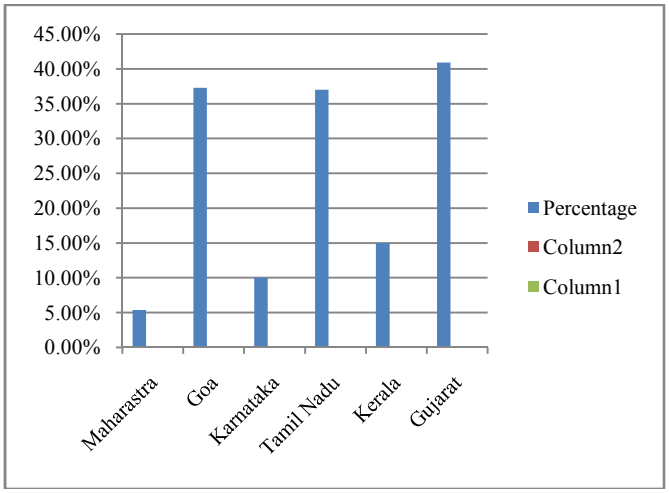

Fig 3 Percentage of urinary stones in different states

Report

In India about12% of population is expected to have a urinary stone ,15% of the Northern india suffers from kidney stones. The prevelance of urinary calculi in southern india is fewer ,From the analysis stones it was found that 90% of patient from north west Karnataka and 98.6% of patient from the south coastal Maharashtra had calicum stones, interestingly only 62.7% of the stone were calcium stones in the patient from Goa . The percentage of the uric acid stones formed in Goa was found to be 37.3 %. Several dietary factors has also been identified. The major risk factors are reduced fluid intake and calcium consumption[16,17,18,19].Increase in the oxlate consumption had also illustrated to induce stone formation.[20,21].

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