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# AN ANALYLITICAL STUDY ON ABNORMAL ULTRASOUND AMONG PATIENTS HAVING SUSPECTED KIDNEY STONES

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**Abstract:**
*Objective:* The purpose of this research work is to find out the medical factors linked with an anomalous ultrasound in the patients found with supposed kidney stones in the setting of outpatient.
*Methodology:* This research work was a transverse study. This case work carried out in the outpatient department (OPD) of the department of nephrology in Allied / DHQ hospital Faisalabad in a duration of three months from January 2019 to March 2019. The age of the patients of this research work was from 18 to 80 years, who appeared with the unilateral flank and/or severe pain in the costovertebral angle with the addition or no addition of other medical factors suspected of having kidney stones on the basis of examination of the physician. The review of the history of every patient carried out after gathering the information of age of the patient, sex, pain radiation, and start of severity in disease, linked symptoms and previous history of kidney stones. The declaration of the anomalous ultrasound carried out if there was availability of the kidney stones in the documents.
*Results:* A sum of two hundred and nine patients were the part of this research work. Among these patients, 60.30% (n: 126) patients were men &39.70 (n: 83%) were female patients with a previous history of the kidney stones. There was anomalous ultrasound in the case of 52.90% (n: 110) patients. On a regression analysis of multivariate logistic, only previous history of kidney stones found with having association with the anomalous ultrasound.
*Conclusion:* In non-availability of any important clinical forecasters, there is justified use of the ultrasound in the patients with supposed kidney stones particularly in those patients who have past background of kidney stones.
**Keywords:** *Kidney Stones, Methodology, Ultrasound, Regression, Multivariate, Analysis, Anomalous.*

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## INTRODUCTION:

The severe pain due to kidney stone is very frequent complication of health [1]. Computerized tomography scan is very sensitive in the diagnosis of the kidney stone [2, 3]. This scan has an association with the exposure to radiation. A large case study showed that the utilization of the ultrasound in the start results in no important disparity in great risk detections, unfavorable incidents, admission in the hospitals, visits in the emergency department & scores of pain. There was very less exposure to the radiation in with the utilization of ultrasound [3]. The utilization of the ultrasound carried out as an initial diagnosis procedure for the patients with supposed kidney stones to avoid the expense & exposure to the radiations of the computerized tomography scan [3-5]. It is the observation of the clinical trials that patients present with the flank pain found in stress of having the stones in kidney and they often demand the ultrasound of the kidney to for the exclusion of the suspicion.

Computerized tomography is very expensive as compared to the ultrasound; it also increases the burden of work for the specialists of the department of radiology. It is not clear that if there is availability of the proper clinical methods which can describe the anomalous findings of the ultrasound in the patients suffering from the severe pain of flank pain & having suspicion of the kidney stones, so obviating requirement for the application of ultrasound in some amount of the patients.

In the research work of Moore, score of STONE were depending upon the 5 features (male gender, less period of pain, nonblack, vomiting & microscopic hematuria), was prognostic of straightforward stones of ureteric [6]. There is very less data on the medical predictors of anomalous ultrasound in the patients suffering from flank pain & supposed kidney stones in the setting of outpatient not in emergency.

## METHODOLOGY:

The research work carried out in the department of nephrology in Allied / DHQ hospital Faisalabad. This was a transverse research work. This research work completed a period of three months from January 2019 to March 2019. Non probability sampling technique was in use as a method of sampling. The ethical committee of the institution gave the approval of the research work. Every patient gave his consent to participate in the research work. The age of the patients was eighteen to eighty year of age. They were suffering from flank pain with or without the signs of renal calculus on the basis of the judgment of the doctor. The unwilling patients were not the part of this research work. The review of the history of every patient carried out to gather the information about the age of the patient, his sex, pain radiation, start of the disease & pain's nature and the related symptoms.

The investigation of the patients about their history with the presence of kidney stones carried out. The examination of each patient carried out to record the tenderness of the costo-vertebral angle with the application of the thumb pressure. All the patients have to face the ultrasound with the utilization of the machine of ultrasound Logiq P5 made up of USA with transducer of 3.50 megahertz. The ultrasound was not abnormal if there was availability of the kidney stone. Average ± SD were in use for the description of the continuous variables. Chi square method was in use for the comparison of the categorical variables. The comparison of the continuous variables carried out with the help of T test. SPSS V 20 was in use for the analysis of the collected information. The calculations of all the odd ratios of the variables carried out with the help of the analysis of logistic regression analysis. A P value less than .050 was significant.

## RESULTS:

A sum of two hundred and nine patients was the part of this research work. Out of total patients, 60.30% (n: 126) patients were male & 39.70% (n: 83) patients were from females gender. Prior history of the kidney stones was present in 28.70% (n: 60). The outcome of ultrasound was anomalous in 52.90% (n: 110) patients. The traits of demography & medical features are available in Table-1.

**Table-I: Clinical Characteristics of all Patients.**

| Demographic & Clinical Attributes | | Mean or Frequency | (±SD) or (%) |
|---|---|---|---|
| | Mean Age in years | 34.0 | 13.01 |
| Gender | Males | 126.0 | 60.30 |
| | Females | 83.0 | 39.70 |
| Pain | Flank Pain | 156.0 | 75.40 |
| | Costovertebral angle pain | 53.0 | 24.60 |
| Radiation | None | 85.0 | 48.80 |
| | Front | 64.0 | 30.60 |
| | Groin | 50.0 | 23.90 |
| | Genitalia | 10.0 | 4.70 |
| Onset of pain | Sudden | 100.0 | 47.80 |
| | Gradual | 109.0 | 52.20 |
| Severity of pain | Mild to Moderate | 133.0 | 63.60 |
| | Severe | 76.0 | 36.40 |
| Pain Character | Colicky | 122.0 | 58.40 |
| | Continuous | 87.0 | 41.60 |
| Urinary symptoms | None | 56.0 | 26.80 |
| | Dysuria | 99.0 | 47.40 |
| | Frequency/urgency | 39.0 | 18.70 |
| | Hematuria | 15 | 7.20 |
| Systemic symptoms | None | 90 | 43.10 |
| | Nausea, vomiting | 109 | 52.20 |
| | Fever | 10 | 4.70 |
| Aggravating factors | None | 111 | 53.10 |
| | Movement | 67 | 32.10 |
| | Rest | 31 | 14.80 |
| History of renal stones | Affirmative | 60 | 28.80 |
| | Negative | 149 | 71.20 |
| Findings after Checkup | None | 152 | 72.70 |
| | Costovertebral angle tenderness | 57 | 27.30 |
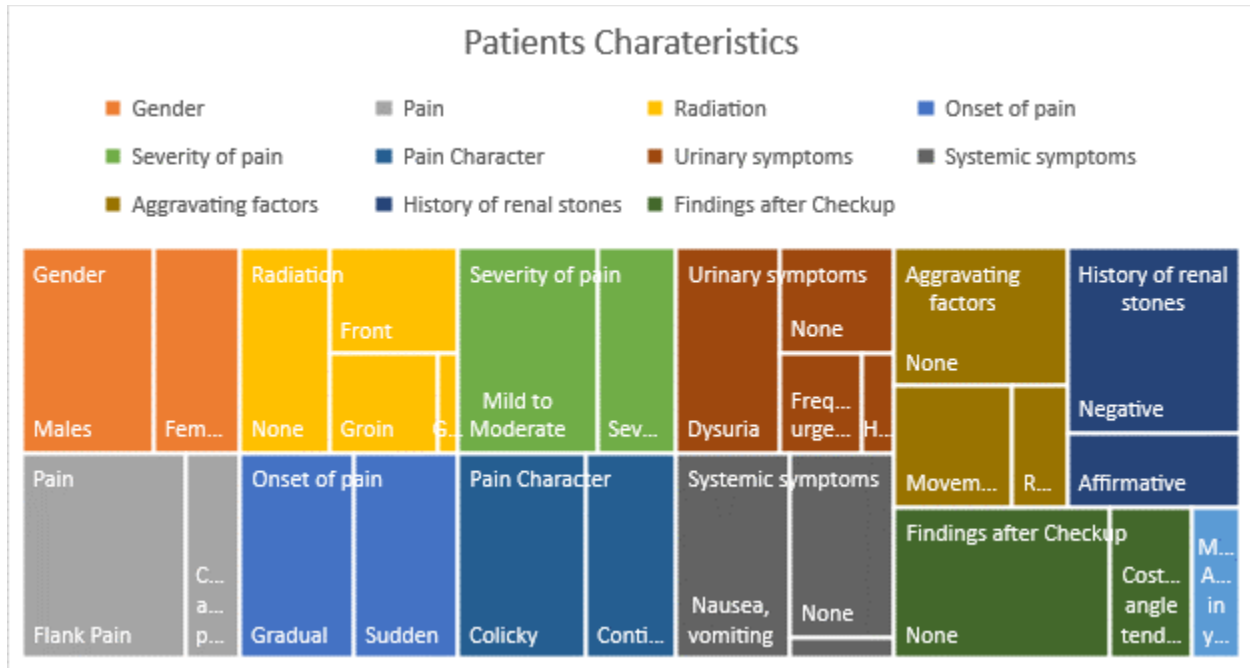
Table-2 showed the comparison between the clinical and demography traits of the participants with or without the anomalous outcome of ultrasound. A regression analysis of multivariate logistic of the anomalous ultrasound carried out. The past history of the kidney stones was available as a related variable with the anomalous outcome of the ultrasound.

**Table-II: A comparison of Clinical Characteristics of Patients With and Without Abnormal Ultrasound.**

| Clinical characteristics | Normal Ultrasound (N:99) | | Abnormal Ultrasound (N:110) | | P value |
|---|---|---|---|---|---|
| | Mean or Frequency | SD or % | Mean or Frequency | SD or % | |
| Mean Age in years | 34.3 | 12.90 | 34.5 | 13.20 | 0.970 |
| Male Sex | 60.0 | 47.20 | 66.0 | 52.80 | 0.980 |
| Flank pain | 71.0 | 45.50 | 85.0 | 54.50 | 0.360 |
| Radiation to | 59.0 | 42.00 | 64.0 | 58.00 | 0.690 |
| Front/groin/genitalia Sudden onset of pain | 48.0 | 48.00 | 52.0 | 52.00 | 0.810 |
| Severe pain | 39.0 | 51.30 | 37.0 | 48.70 | 0.360 |
| Colicky pain | 60.0 | 49.20 | 62.0 | 50.80 | 0.480 |
| Any urinary symptoms | 74.0 | 48.40 | 79.0 | 51.60 | 0.620 |
| Nausea, vomiting or fever | 55.0 | 46.20 | 64.0 | 53.80 | 0.760 |
| Aggravation by movement | 29.0 | 43.30 | 38.0 | 56.70 | 0.740 |
| Past history of nephrolithiasis | 17.0 | 28.30 | 43.0 | 71.70 | 0.001 |
| Costovertebral angle tenderness | 26.0 | 45.60 | 31.0 | 54.40 | 0.790 |
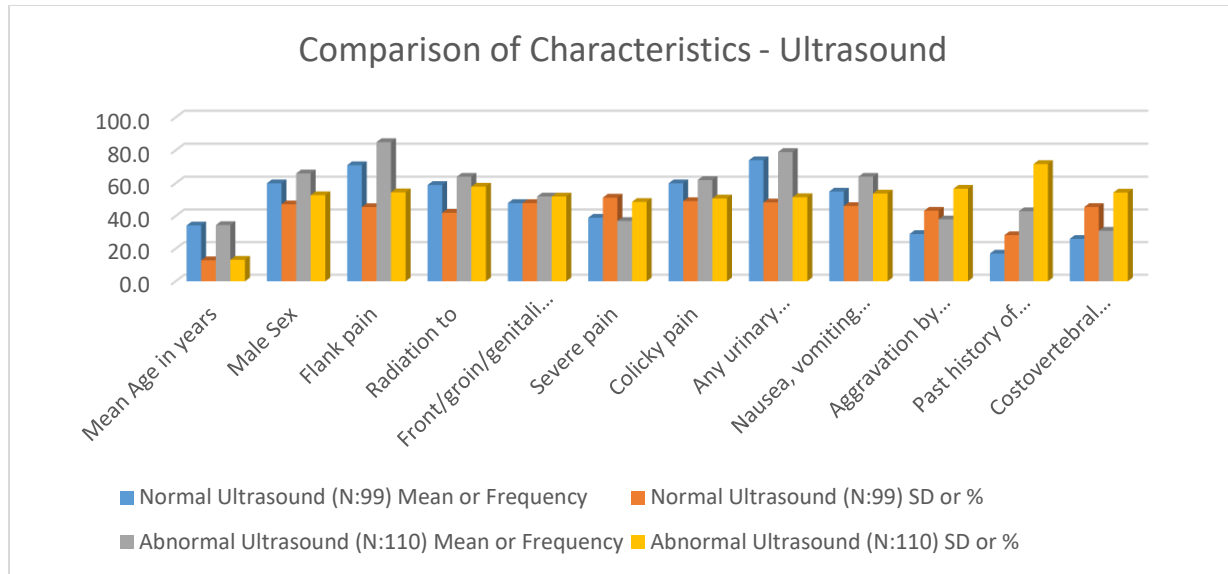
**DISCUSSION:**

In this research work, we discovered that ultrasound was not correct in more than half quantity of patients who were suffering from flank pain & suspected kidney stones. The previous history of the kidney stones was available to have an association with anomalous ultrasound. Other case works have discovered the same or less rate of kidney stones on imaging techniques in the patients. The kidney stones were available in 47.70% of all computerized tomography scans in one research work [7]. While the surety of the presence of these stones within 6 months was complete in one third patients who had underwent either computerized tomography or ultrasound [3]. The sensitivity & specificity of the ultrasound are 54.0% -57.30% & 73.0%-97.50% correspondingly in the diagnosis of the kidney stones [3, 8]. The ultrasound was not so much precise in the diagnosis of the kidney stones in comparison with the computerized tomography scanning [9].

The unilateral hydro-nephritis with the outcome of stone with the help of ultrasound enhances the sensitivity to 81.30 to 82.40% in the diagnosis of the kidney stones [10, 11]. Ultrasound usage as an early research of imaging is not without justification on the basis of many research works which have displayed no disparity in the administration of the patients & findings among computerized tomography & ultrasound in the patients found with suspicion of having kidney stones [3, 12-15].

In some other research works, the frequency of the urological involvement was very low [13, 15] or there was no requirement of the admission of patient in thirty days [14] in only those patients whose outcome of the ultrasound was correct. Moore in his research work described scores of STONE on the basis of five features [6]. The validation of the score of STONE cannot be ignored especially in the young people [16]. One other case work questioned the validity of score of STONE as its sensitivity was just 53.0% & its specificity was only 87.0% for the presence of ureteric stones in the patients with high danger [17].

This research work is a study conducted in a single health care department and it has limited size. There is a justification of the utilization of the ultrasound in the initial stage on the basis of the data on the same subject. We were not able to use the CT scan sue to non-availability which is an ideal standard for the discovery of the renal stones. The absence of the follow up was another limitation of the research work.

**CONCLUSION:**

The outcome of the ultrasound was anomalous in half quantity of the patients with the supposed kidney stones. In the non-availability of the suitable medical predictor for the anomalous outcome of ultrasound except the previous past history of the kidney stones, we support the utilization of ultrasound during initial checkups of the patients for the assessment of the disease. The patients having the previous history of the kidney stones are more prone to have an anomalous outcome of ultrasound.

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