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Estimation of Normal Spleen Dimensions Using Ultra Sound

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Abstract **Original Research Article**

Spleen dimensions are so sensitive because it verifies existence of a variety of disorders. The purpose of this study was to estimate the normal dimensions of the spleen among the selected sample at Taif city. This study considered as a prospective, analytical, and a descriptive study that deal with the abdominal ultrasound (spleen). The data collected from King Abdul Aziz Specialized Hospital (KAASH), from March to June 2018. Sample frame was comprised 50 patients confirmed normal spleen findings by ultrasound. Selection of participant was done through simple random sampling concerned with spleen. The data analyzed by Statistical Package for the Social Sciences SPSS program. The main results of the study found that the mean length of the spleen among all age groups was 10.07cm, the mean width was 6cm, and the depth was 5.1cm. There was no significance difference for the normal spleen measurements between both genders. More studies needed to establish baseline for spleen dimensions measurement with large population volume included in the future studies.

Keywords: Spleen Dimensions, Taif City, Spleen, SPSS program.

INTRODUCTION

Estimation of spleen size is imperative since numerous disarranges with broadening (splenomegaly) or diminishment of the spleen. Foundation of typical values of the spleen in schedule sonographic examinations can serve as a base line for conclusion of endemic diseases within the region related with changes in its size such as lymphoma, sickle cell disease and tropical splenomegaly disorder counting intestinal sickness. The basic capacities performed by the spleen too require its sonographic biometry. The morphological characterization of the spleen is one of the numerous parameters that help in recognizing splenic clutters and systemic contaminations, infectious and carcinomatous pathologies. Perpetually the total characterization of the pathological process may require morphological appraisal of anatomical structures and research facility reports. In any case, there are numerous conditions where organomegaly may be the only feature on ultrasonography like splenomegaly in intestinal sickness. On the opposite, clinically substaintial spleen may not be necrotic. Pushed down spleen due to subdiaphragmatic pathology, visceroptosis and discernable spleen in 10% to 15% of typical children are a many cases of substantial spleen without any clinical centrality [1]. Clinical evaluation of changes in visceral organ measure is troublesome and untrustworthy [2].

In numerous nations with endemic schistosomiasis, abdominal ultrasonography is utilized for organometric examinations of the spleen and liver and has been appeared to be dependable and reproducible [3]. In Nigeria as well, ultrasonography can be utilized in epidemiological considers of numerous endemic illnesses like chronic malaria and typhoid fever, given we have standardizing information. So distant we do not have any standardizing information on spleen size in a large population of school age children from our nation. Organ volumes gotten by utilizing different organ measurements and body surface ranges are as now utilized in relation with body parameters to portray the typical measurements and to estimate the degree of pathologic deviations from typical. In any case, these volume estimation producers are time devouring and illogical in day by day utilize. In this manner, utilize of length, width and or antero-posterior measurements appears more practical for reason of setting up normograms. Any different data, like age, physique weight and peak which are without difficulty available can be blended with the above measurements when necessary.

Ultrasound measurement of splenic length is general practice, but it is not recognized how nicely this represents the genuine dimension of the spleen. Previous studies, the use of a mixture of measurements

from in vivo and resected spleens, had been challenge to error because of changes in splenic measurement [5].

OBJECTIVES

General Objectives

- To show the normal measurement of the spleen among Saudi population.
- To put standard reference measurement of the normal spleen among Saudi population.

Specific Objectives

- To measure the length of the spleen.
- To measure the width of the spleen.
- To measure the depth of the spleen.

MATERIAL AND METHODS

A prospective, analytical, descriptive learn about deal with the belly ultrasound (spleen). The motive of this study was to measure the ordinary dimensions of the spleen among the selected pattern at Taif city. The data gathered from King Abdul Aziz Specialized Hospital (KAASH), from 9 am- two pm every Monday weekly. Sample body was comprised 50 sufferers validated everyday spleen findings were scanned through ultrasound. Selection of participation was executed via easy random sampling concerned with spleen. The patient examined in a fasting state, imposing dietary restrictions (avoidance of gas-producing foods), the water contrast method is also very appropriate for demonstrating the wall of hollow organs such as (the bladder, gall bladder, and stomach), and distinct positioning [6]. Usually the examination is carried out with the patient in supine position. Additional scans in the lateral decubitus and susceptible positions have been essential and useful in some situations, in particular in obese patients or sufferers with skeletal deformations [7]. The vicinity of interest in the abdomen used to be completely evaluated in at least two scanning planes. Surveys were used to set correct imaging techniques, to rule out pathologies, and to recognize any ordinary editions [8]. The researcher used Shimadzu SDU- 350XL (Japan) ultrasound machine with multi-frequency curvilinear probe (3.5–5 MHz) which has variable focal zone and frequency capability, and KIAXIN (China) with two probes curvilinear multi-frequency (2 MHz–5 MHz) and linear high frequency 6.5 MHz probe. The facts have been analyzed by way of SPSS via the use of the number data computerize methods and introduced in dummy tables and figures. Especial consideration was given to the proper confidentially and anonymity of all lookup participants. Anonymity used to be carried out by means of the usage of numbers for every lookup participant that would furnish link between the data collected and the participants. In addition confidentiality used to be ensured by making the accumulated facts handy only to the researchers and the advisor radiologist.

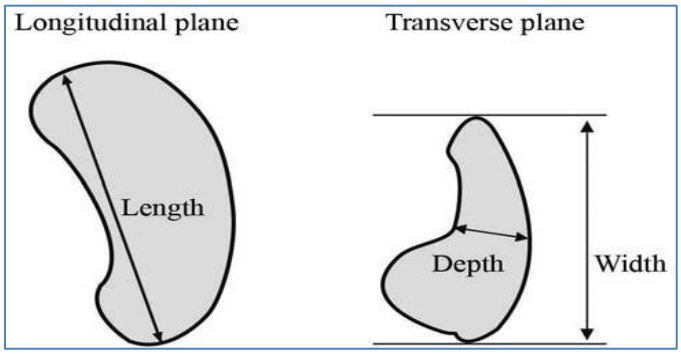

Fig-1: Diagram shows how to measure spleen length, width, and depth (in centimeters) on longitudinal and transverse planes

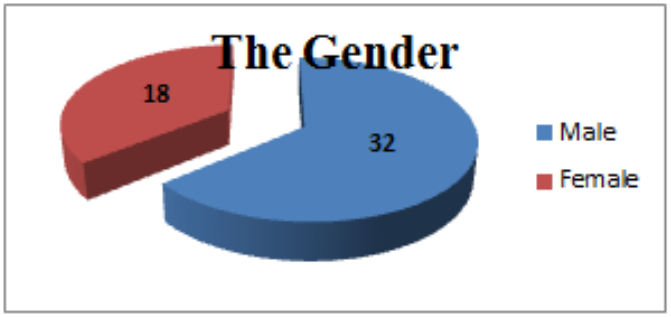

Fig-1: The gender distribution

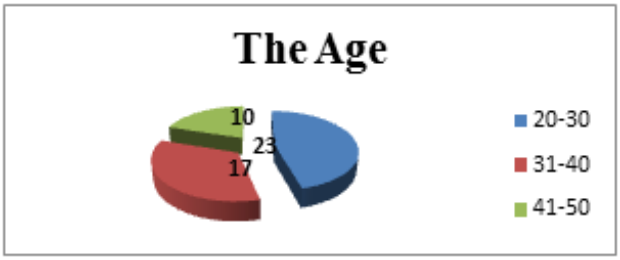

Fig-2: The age distribution

Table-1: The age group 20 -30 years and the normal measurement of the spleen

Age group	Length mean	Width mean	Depth mean
20-30	11.3	6	5.5

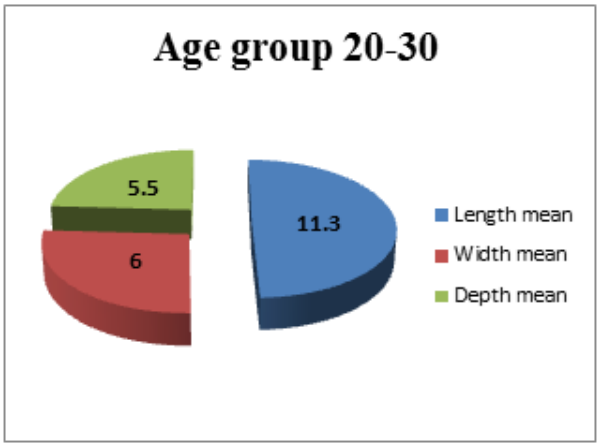

Fig-3: The age group 20 -30 years and the normal measurement of the spleen.

Table-2: the age group 31 -40 years and the normal measurement of the spleen

Age group	Length mean	Width mean	Depth mean
31-40	10.7	6	5.1

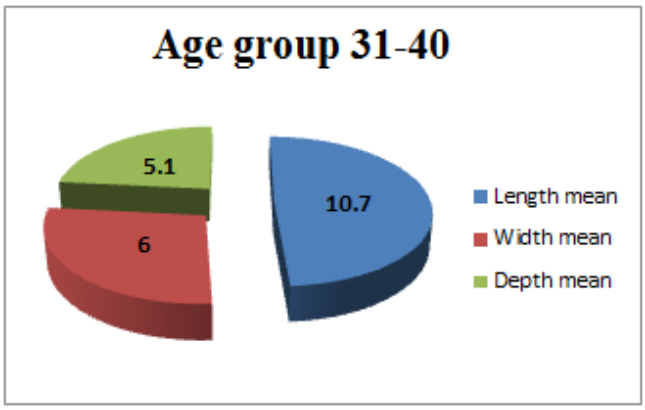

Fig-4: The age group 31 -40 years and the normal measurement of the spleen.

Table-3: The age group 41 -50 years and the normal measurement of the spleen

Age group	Length mean	Width mean	Depth mean
41-50	11.2	5.8	5.8

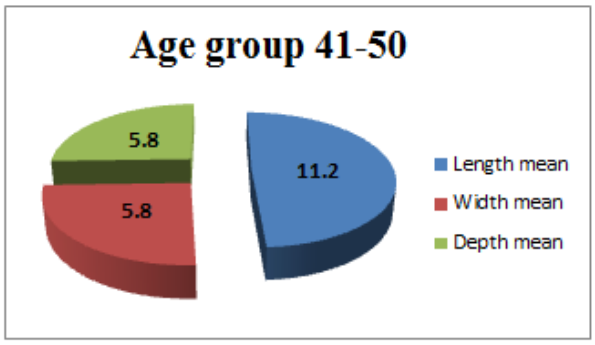

Fig-5: The age group 41 -50 years and the normal measurement of the spleen.

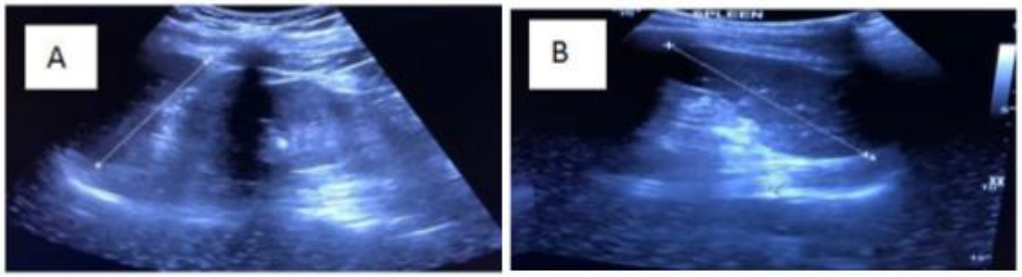

Fig-6: A. spleen width B. spleen length

DISCUSSION

Imaging modalities are methods are most reliable in investigations of estimation of organ dimensions [9, 10]. Ultrasound is the best of choice in determining soft tissue dimensions specifically spleen dimension so it is widely used for today practice [11].

The current manuscript estimated the average length of the spleen to be 11.2 ±0.91 cm, the average splenic width for this article was 5.9±0.59cm. The common width of the spleen obtained through Audrey L. Spielman *et al*. was 5.0 ± 0.8 cm [12]. In addition the study revealed that spleen size was 11.4 ± 1.7cm this finding also matched the finding of study performed in 1998 by OL Konus *et al*. [13].

The main purpose of this article is to estimate the normal measurement of the spleen of the population of Taif city few studies was done which represent a few records about this races. There are a few differences comparing with previous studies and international measurements of spleen dimensions. No doubt the environment and the climate of the Taif City affect the normal spleen size as we know this city is one of higher area from the sea level in Saudi Arabia.

CONCLUSION

This article have a small sample size to put a chart of normal spleen dimensions, for a good and more accurate measurement of spleen a farther study should be carried with a large sample size. This study concludes that the mean splenic length, width, and size are 11.2 ±0.91 cm, 5.9±0.59cm, 11.4 ± 1.7 cm respectively.

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