ULTRASONOGRAPHIC MEASUREMENT OF SPLENIC LENGTH IN RELATION WITH HEIGHT IN BIHARI ADULT POPULATION A PROSPECTIVE STUDY.

Alka Singh*, Hamid Ansari*, J K Das, Naresh Chandra***

*Department of Anatomy, Hind Institute of Medical Sciences, Safedabad, Barabanki.
**Department of Anatomy, Dharbhanga Medical College, Darbhanga.

ABSTRACT

Spleen, the largest ductless gland in the body, shows variations in its size and weight at different periods of life, in different individuals, and in the same individual under different conditions. The splenic size may give information regarding diagnosis and course of various gastrointestinal and haematological diseases so the estimation of the splenic size in vivo is often important in the diagnosis, treatment and prognosis of a variety of disorders. The present study was done to determine the normal range of length of spleen in correlation with the height of adult male and female subjects. A total of 160 patients, 80 males and 80 females were selected. Height of each individual was measured and their splenic length was determined by ultrasonography. It was observed that the length of spleen increased with increase in the height in both male and female. The dimension was less in female than that of male with corresponding body height.

Key words: Spleen, ultrasonography, height, length

INTRODUCTION

The spleen also known as "lien" is the largest ductless gland in the body. It shows variations in its size and weight at different periods of life, in different individuals, and in the same individual under different conditions.

The precise measurements of the spleen by palpation is not reliable since in some of the cases a normal sized spleen is palpable where as a nonpalpable spleen is not always normal sized.

The splenic size may give information regarding diagnosis and course of various gastrointestinal and haematological diseases[1], so the estimation of the splenic size in vivo is often important in the diagnosis, treatment and prognosis of a variety of disorders.

Ultrasound has been found to be both accurate and reliable[2] for these measurements with the advantages of lack of ionizing radiation, low cost, portability of instrument, non-invasive, lack of risk of allergic reactions as compared to other diagnostic tools, such as simple x-ray[3], Radionuclide imaging[4], Angiography, Sulfur colloid and Scintigraphy[5], CT and MRI.

The present study was attempted to determine the normal range of length of spleen in adult male and female subjects of different height.

Correspondence
Dr. Alka Singh
Assistant Professor,
Department of Anatomy, Hind Institute of Medical Sciences, Safedabad, Barabanki.
Mob. 9532064848 E-mail: dr.virendrasingh06@rediffmail.com
hamidansari78@gmail.com

MATERIAL AND METHODS

A total of 160 patients, 80 males and 80 females aged between 20 to 60 yrs. coming in Department of Anatomy and Radiology, Darbhanga Medical College, Darbhanga were selected. Patients with a history of splenectomy, age younger than 20 years, a history of malignancy, hematologic disorders, and prolonged febrile illness were excluded. The height of the patient was recorded with the help of the stadometer. The instrument measures the height in cm with an accuracy of 0.1 cm. With the help of ultrasound the length of the spleen was measured on longitudinal coronal image from dome to tip through the hilum.

OBSERVATION AND RESULT

Height	N	Mean(mm) ±S.D.	Range (mm)
151-155cm	12	92.9 ± 10.56	70-130
156-160cm	13	95.65 ± 15.64	73.2-132
161-165cm	18	98.77 ± 15.07	79.1-128
166-170cm	21	101.34 ± 14.15	71.6-123
171-175cm	16	107.06 ± 8.20	79.4-119.5

Table I : Comparison of splenic length with height in males

Height	N	Mean(mm) ±S.D.	Range (mm)
146-150 cm	14	88.28 ± 14.61	68.4-118
151-155cm	22	89.45 ± 14.83	65.4-121
156-160cm	16	91.89 ± 13.93	74.4-123.3
161-165cm	12	94.64 ± 10.58	79.4-114
166-170cm	16	98.98 ± 12.61	83.2-122

Table II Comparison of splenic length with height in females.

Fig. I - Comparison of the splenic length with the height of the subjects (Table I & II)

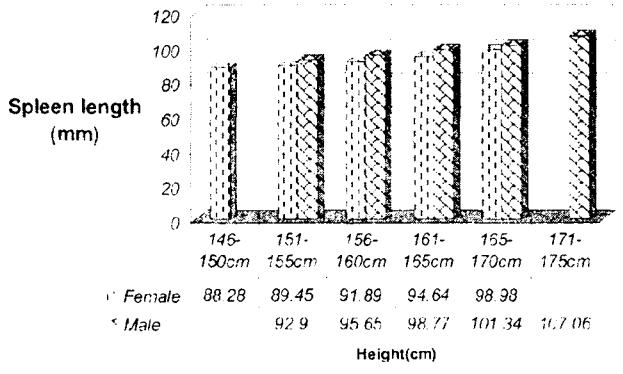

Fig-I shows that the splenic length increased with height in both male and female. The splenic length was less in females than males with each corresponding groups of the height

DISCUSSION

In one study the splenic size was evaluated in patients with sarcoidosis and thrombocytosis, the splenomegaly was present in 57% of the patients (using sonographic criteria to evaluate the size), but only clinically palpable in 8% of the cases[6] therefore the imaging has become essential for the accurate measurement of the splenic size.

In the present study it was observed that the length of spleen increased with increase in the height in both male and female. The dimension was less in female than that of male with corresponding body height. These findings were in accordance with the findings of various workers.

Konus et. al.[7] proposed that the splenic length correlated best with the body height. This was similar to the findings of the present study.

Megremin et al.[8] revealed that the body height has a significant positive correlation with the splenic length. Their findings were similar to the findings of the present study.

Spielmann et al.[9] proposed that the body height was correlated with the length and width of the spleen in males and females. Their findings were in favour of the present study. They also proposed that all the splenic dimensions correlated better with the height than the weight.

REFERENCES

1. Niederau, C., Sonnenberg, A., Muller, J.E., Erckenbrecht, J.F., Scholten, T., Fritsch, W.P. Sonographic measurements of the normal liver, spleen, pancreas, and portal vein. Radiology. 1983; 149(2): 537-40.
2. Petzoldt, R., Lutz H., Ehler, R., Neidhardt, B. Determination of splenic size by ultrasonic scanning. Med Klin. 1976 Nov 26; 71(48): 2113-6.
3. Schindler, G., Longin, F., Helmschrott, M. The individual limit of normal spleen size in routine x-ray film Radiologe. 1976; 16(4): 166-71.
4. Frank H. Deland. Normal spleen size. Radiology. 1970; 97(3):589592.
5. Roberts, J.G., Wisbey, M.L., Newcombe, R.G., Leach, K.G., Baum, M. Prediction of human spleen size by computer analysis of splenic scintigrams. British Journal of radiology 1976; 49(578): 151-5.
6. Kataoka M, Nakata Y, Maeda T. Ultrasonographic analysis of splenomegaly in patients with sarcoidosis [in Japanese]. Nihon Kyobu Shikkan Gakkai Zasshi 1990; 28:750-755.
7. Konus O.L., Ozdemir A., Akkaya A., Erbas G., Celik H., Isik S. Normal liver, spleen, and kidney dimensions in neonates, infants, and children: evaluation with sonography. American Journal of roentgenology. 1998; 171(6):1693-1698.
8. Megremis, S.D., Vlachonikolis, I.G., Tsilimigaki, A.M. Spleen length in childhood with US: normal values based on age, sex, and somatometric parameters radiology. 2004; 231(1): 129-34.
9. Spielmann, A.L., DeLong, D.M., Kliewer, M.A. Sonographic evaluation of spleen. Forensic Science International 2006; 22.88(3): 215-23.