SUMMARY

A review of the classification of abdominal masses in infants and children, and the different radiological and imaging techniques used in their investigation was included and discussed in this work.

Infants and children with varieties of abdominal masses were investigated using various imaging modalities. The diagnosis was confirmed by laboratory and pathological studies.

Study of the obtained images of different modalities was carried out. The correlation between the role of ultrasound and the role of CT in confirming, characterization and staging of the pediatric abdominal masses was also made.

It was found that each mass has a specific radiological and imaging findings by ultrasound and computed tomography. The value of each of them was discussed.

Plain film for the abdomen was helpful to show soft tissue tumification, calcification and stone formation. **Excretory urography,** including lateral film, should be the first examination to start with in all cases of abdominal masses, to evaluate the function of each kidney and provide a map for ultrasonography. It is very valuable also in most cases of retroperitoneal and pelvic masses, especially those of renal origin. It could give an idea about the kidneys and ureters before any surgical interference.

Ascending cystography is indicated if excretory urography reveal an element of lower urinary tract obstruction or vesico-ureteric reflux.

Ultrasound is usually done after excretory urography in renal masses.It is done first in suspected non functioning kidneys or hepatic masses. If the mass is far anterior in the abdomen and/or associated with gastrointestinal vomiting or bleeding, ultrasound is the appropriate study followed by barium series.

At last **CT** comes if the diagnosis of the abdominal mass is not clarified, especially if the retroperitoneum is not clear by ultrasound.

In the correlation between ultrasound and CT, it is found that CT is superior to sonography in detecting retroperitoneal masses, localizing the lesion in relation to the facial compartments; and determining the extent of the disease; because the retroperitoneum is obscured from ultrasound beam by bowel gas, fat.

It is found also that CT is much higher superior in demonstration of adrenal gland lesions. It is difficult in some circumstances by ultrasound because of the relatively small size of these glands. Also, because of their deep location in the retroperitoneum and the proximity to large organs.

It was noted also that CT can provide good anatomical details especially if thin slices are selected on the region of interest. CT produces only axial sections whereas US can take views in any desired plane.

On the other hand, US is much more available, more cheap, still has no harmful effect and has no contraindication. It has also the advantage of possible serial examination. Ultrasound is operator dependent, has wide variations in technical quality with different examiners and with poor bowel images because yet there is no US contrast material available.

It was noted also that the classical limitations for US such as extensive bowel gas, obesity, ascites, residual barium, wounds and drains is not a limitation factor in CT.

CT with enhancement can be utilized for staging of malignant mass lesions, and its extension into adjacent tissues, including the inferior vena cava.

The development of new technology has led to suggest a sensible, rational approach that can be used in selecting appropriate imaging studies for a child with a mass. In order to provide optimal care to the child with the least expense and trauma, the referring physician and the radiologist must make these imaging decisions only after careful integration of all clinical and imaging data.

Although both US and CT modalities were accurate, each has its particular advantage of specific problems. On the other hand each of them had its limitations. Knowing the efficiency and limitations of US and CT is the key to their use.

Optimally US and CT scanning are complementary to each other in the evaluation of pediatric abdominal masses. US appears to be the best method for screening and follow up in patients with abdominal masses. CT adds anatomical information which is of great value in planning the surgical approach or in confirming the nature of the lesion prior to surgery in different cases. The flexible complementary use of these modalities affords the potential for increasing the diagnostic yield in pediatric abdominal masses.

Thorough clinical examination is very helpful in the choice of the first diagnostic procedure.

Plain x- ray remains an important diagnostic tool of abdominal masses. US & CT are cansidered excellent diagnostic madalities for diagnosing abdominal masses in children and infants.

US is less expensive and has no hazards of hypothermia, US is adviced as a primary diagnosic procedure for abdominal masses. CT is decided if necessary.