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Application of Ultrasound in Medical Therapy

Abdulaziz Faraj Al-Qahtani[1], Ibrahim Mohammed. Alasmare[1], Jaber Saleh Al-Qaisi[1], Ibrahim Mohammed Alqarni[1], Abdullah Mohammed Al-Ahmari[1], Ayed Wazi Alshahrani[1], Abdulrhman Waleed Almusallam[2], Abdulrahman Ahmad Almashniwi[2]

1. Biomedical Engineering department- Armed Forces Hospital in Southern Region
2. Clinical engineering department Prince Sultan Cardiac Center

Email: Engineer_abdulaziz1@hotmail.com

ABSTRACT

Objectives: To evaluate the role of ultrasound and its applications in healthcare, and to examine its relationship with biomedical engineering.

Methods: This prospective clinical trial included 75 patients suspected of bladder tumors at Golestan Teaching Hospital, Ahvaz (2014-2015). The sample size was calculated using a 5% error level, 80% test power, and 0.7 effect size (d). Patients with a smoking history and those with irritative symptoms or painless hematuria were included.

Results: Among the 75 participants, 7% were female and 91% male, with ages ranging from 18— 86 years (mean: 61.58 ± 16.21 years). The 61—70 age group represented the largest proportion (34%). Smoking history was recorded for 81% of patients, and the most common symptoms were irritative symptoms (80%) and painless hematuria (89%).

Conclusion: The results of the study showed that sonography has a high sensitivity and specificity (100%) in identifying bladder malignancies. Since ultrasound is considered a noninvasive diagnostic technique, it can be used as a screening tool to rule out bladder tumors in patients with painless hematuria, avoiding the need for unnecessary cystoscopy.

KEYWORDS: computed tomography, magnetic resonance imaging, ultrasound.

1. Introduction

One Ultrasound is a frequent medical imaging technology. Its main applications include vascular imaging, general abdominal imaging, obstetrics and gynecology, cardiology, urology, and surgical guidance. (l)

After radiography, ultrasonography is the most widely used diagnostic imaging method outside of the US, particularly in developing nations. Although radiologists frequently favor alternative high-tech modalities like computed tomography (CT) and magnetic resonance imaging (MRI),

ultrasonography is widely used by doctors in the US. (2) Ultrasound's limited penetration is its primary flaw. Because sound waves cannot travel through air or bone, ultrasound cannot be used in the brain, lungs, or abdomen.Furthermore, getting diagnostic pictures of overweight people is quite challenging. (l)

Another drawback of ultrasonography is that its utility is contingent on the proficiency of the doctor or technician doing the test. Ultrasound images are not entire tomographic slices, thus they are difficult to decipher without context, and the results are frequently hard to replicate. The slice axes of other technologies, including CT and MRI, are usually produced perpendicular to the body's longitudinal axis, making them more objective and repeatable. (1)

We must first have a method for producing ultrasounds before we can utilize them to locate objects. We require a particular substance known as a "piezoelectric crystal" in order to produce vibrations that will move through a patient's tissues. This substance possesses a very unique quality. A piezo electric crystal (shown in red below) expands when a voltage is applied. The piezoelectric crystal quickly expands and relaxes, producing ultrasonic waves, if the voltage is supplied and removed frequently. When the voltage is removed, it contracts back into its previous thickness .(2)

Preprocessing and post-processing procedures are the two primary categories into which ultrasound enhancement methods fall. Preprocessing techniques include changes to the signal production and/or picture collection stages and address image degradation associated with the physical characteristics of the signals involved (coherence, bandwidth, nonlinear propagation, attenuation, absorption, etc.). (3)

This category includes, for instance, pulse inversion, harmonic imaging, and spatial and frequency compounding. On the other hand, postprocessing algorithms improve the photos after they have been obtained by the use of signal processing techniques. These techniques include deconvolution and filtering. (3)

The purpose of this study is to evaluate how ultrasound can enhance healthcare around the world. Furthermore, it will outline the advantages and difficulties of this position. The study will promote future intemational collaboration for cutting-edge and sustainable healthcare solutions globally by offering a thorough grasp of the U.S. contributions and how to optimize the benefits of its accomplishments globally

2. Methods

This research consists of a prospective clinical experiment. The study covered all patients with probable bladder tumors who were admitted to Golestan Teaching Hospital in Ahvaz between 2019 and 2020. The sample size was determined to be 75 participants, given the 5% error level, 80% test power, and 0.7 effect size (d).

Patients who were referred to the hospital for a cystoscopy and suspected of having bladder cancer who gave their agreement to take part in the trial were covered by the criteria for inclusion. Patients with recurrent superficial bladder cancer who did not have a definitive diagnosis were excluded from the study. Patients who did not give their agreement to participate were also excluded.

Ethical approval was obtained from the Institutional Review Board at Golestan

Teaching Hospital, and all participants provided written informed consent.

According to the inclusion criteria, the patients were admitted to the study. The patients then had ultrasonography. For every patient, an ultrasound was performed using a GE Voluson 730 with a convex probe at a frequency of 5.3 Hz. A single person performed all of the ultrasounds. Following that, the patients had a cystoscopy performed by a urologist who was unaware of the ultrasound data. Following that, tissue samples were prepared and delivered to the pathology lab for analysis.

Analysis of statistics : The researcher created checklists to record the patients' demographic information and clinical symptoms, which were then entered into SPSS 17.0 (IBM, Armonk, NY, United States of America.

Analytical and descriptive statistical studies were performed. Descriptive criteria were used to report clinical and demographic information about the patients. Appropriate parametric and nonparametric tests were used in the analytical part based on the statistical assumptions that were met. The independent t-test and the chi-square test were used to assess the quantitative and qualitative data, respectively. The nonparametric Mann-Whitney test was employed when the main presumption, such as normality, was not satisfied. Every test was conducted with a 5% error level.

3. Results

Seven (%) of the 75 patients that took part were female, and 68 (91%) were male. With a range of 18—86 years, the participants' mean age was 61.58 ± 16.21 years, and the age group of 61—70 years had the highest frequency (34%). Furthermore, it was shown that 61 individuals, or 81% of the total, had a history of smoking. Furthermore, it was reported that irritative symptoms (80%) and painless hematuria (89%) were the most prevalent symptoms. (table 1)

Out of the 75 participating patients 61 are smoker and 14 are non smoker. (figure 1)

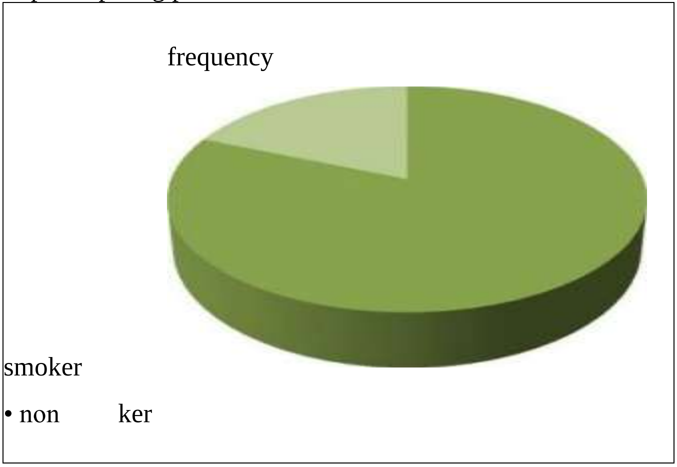

Figure 1: frequency of smoking among study participants: Out of the 75 participating patients 61 are smoker and 14 are nonsmoker .

Table 1: Socio-demographic characteristics of the study participants .

		Frequency	Percentage
Age (in years) median (min—mix		61.58(18-86)	
gender	Male		91
	Female	7	9
Smoking bac round	Smoker	61	81
	Nonsmoker	14	19
Clinical symptoms	painless hematuria		89
	Blood clotting		37
	Burning in urination		62
	Irritative symptoms		80
	Abdominal pain	6	
	Obstructive symptoms		19
	General symptoms	5	7
Clinical oms	painless hematuria		89

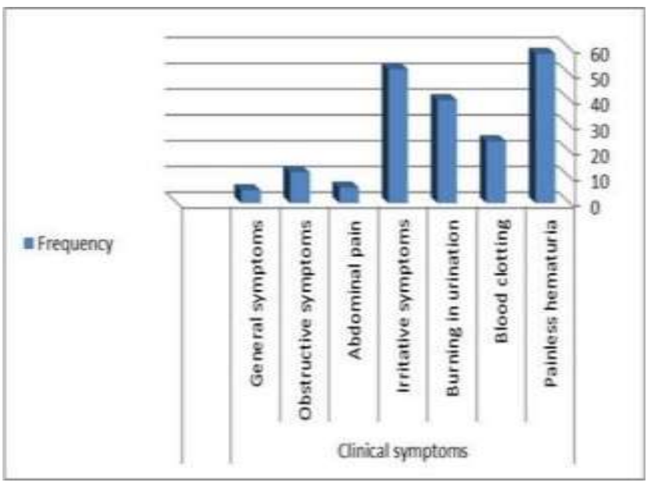

Figure 2 frequency of clinical symptoms among study participants:

Out of the 75 participating patients the most frequent symptoms (58) and the least frequent symptoms is general symptoms(5).

Table 2: Forty-eight of the 75 patients who signed up for the trial had IVP.and the existence of many shadows was the most frequent finding in IVP (31%) followed by the negative result (27%). The presence of shadows with a diameter less than 2 cm was the least common (4%).

		Frequency	Percentage %
IVP results	Tumor shadow below 2 cm	2	4
	Tumor shadow over 2 cm	11	23
	Numerous tumor shadows	15	31
	Inflammation of the kidneys and ureters	9	19
	Negative	13	27
Sonography results	Tumor below 2 cm	10	12
	Tumor over 2 cm	28	37
	Numerous	22	29
	Irregularities in the bladder wall	9	12
	Papillary	64	86
	Unfounded	20	27
	Calcification	4	5
	Cystic compound	3	4
	Bladder and uretral inflammation	20	27
	negative	6	8
Cystoscopy results	Tumor on the side walls	20	26.6
	Tumor in the bladder triangle	8	10.7
	Tumor on the front wall	6	8
	Tumor on the rear wall	9	12
	Tumor in the bladder neck	4	5.3
	Numerous tumors	27	36

Forty-eight of the 75 patients who signed up for the trial had IVP.and the existence of many shadows was the most frequent finding in IVP (31%) followed by the negative result (27%). The presence of shadows with a diameter less than 2 cm was the least common (4%). (Table 2)

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The most frequent discovery among the 75 patients who underwent sonography was the presence of bladder papillary tumors (86%) followed by tumors larger than 2 cm (37%). The least common findings were associated with cystic tumors (4%) and negative results (8%).

According to the results of the 75 patients' cystoscopies, the most frequent finding was the presence of several tumors (36%), with only one case being negative (1.3%). Additionally, pathological results revealed that 1.3% of individuals were normal, 2.7% had SCC, and 96% had TCC. In addition, 44% had a third-degree tumor, 33% had a second-degree tumor, and 23% had a first-degree tumor. Table(3)

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Out of 75 participants the most frequent gender is male (68) and the least frequent gender is female (7). (figure3)

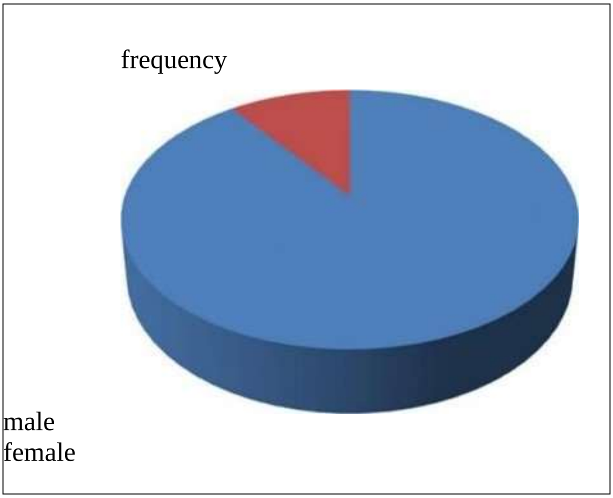

Figure 3: frequency of gender among study participants :

Out of 75 participants the most frequent gender is male (68) and the least frequent gender is female (7).

4. Discussion

Sonography's sensitivity, specificity, positive predictive value, and negative predictive value for the identification of bladder tumors were 93.24%, 100%, 100%, and 16.66%, respectively, according to the study's findings. In their study of 173 individuals with painless hematuria, Stamatiou et al. found that the test's sensitivity and specificity for identifying bladder tumors were 87.1% and 978.1%, respectively.Additionally, they demonstrated that the sonography's positive and negative predictive values were, respectively, 95.4% and 94.4%. (59)

With the exception of the current study's negative predictive value of 16.66%, the results of that study are comparable to those of the current study. Since people cannot endure cystoscopy, sonography can be used for further examinations for patients who have trouble using cystoscopy, particularly those who have painless hematuria. Ultimately, it was determined that sonography has a lower value than cystoscopy. (59)

Sonography's sensitivity and specificity in identifying bladder cancers were 83% and 93%, respectively, while its positive and negative predictive values were 89% in another study conducted by Mwashambwa et al.The current study's specificity was claimed to be 100%, however the results of that study were lower. Given the importance of specificity in assessing a test's validity, the current study's findings are more trustworthy. Additionally, because sonography is a test that heavily relies on the operator, the discrepancy between the two studies can be linked to the variations in the experiences of the operators. (60)

A study by Datta et al. looked into the usefulness of sonogmphy in the diagnosis of bladder cancers. According to their findings, the test's sensitivity, specificity, and positive predictive value were 63%, 99%, and 100%, respectively.That study's findings were comparable to the current study's in terms of positive predictive value, but the current study's sensitivity was said to be better. Silva-Ramos et al. also conducted research to find out how accurate three-dimensional (3D) sonography is at identifying bladder cancers. (61)

Their study's findings showed that 3D sonography had sensitivity, specificity, and positive and negative predictive values of 83.3%, 1()()%, and 93.8%, respectively.Their study's findings are comparable to the present investigation's. (62)

References

1- Ortiz, S. H. C., Chiu, T., & Fox, M. D. (2017). Ultrasound image enhancement: A review. Biomedical Signal Processing and Control, 7(5), 419-428.
2- K. K. Shung, "Diagnostic ultrasound: Past present and future", J. Med. Biol. Eng. (2018), vol. 31, no. 6, pp. 371-374,
3- K. J. Schmailzl and O. (1994) Ormerod, Ultrasound in Cardiology, Oxford, U.K.:B1ackwe11Sci,
4- S. H. Yeo and H. Y. Zhang, in MEMS/NEMS, ed. C. T. Leondes, (2020) Techniques in Sonophoresis Biomedical Devices and Their Applications, Springer, Boston, pp. 1329-1385. 2 D. Park, G. song, Y.
5- won, T. son, O. Cha, et al (2016)., Sonophoresis using ultrasound contrast agents: Dependence on concentration, PLoS One, , 11, 1—14.
6- S. Mitragotri, D. A. Edwards, D. Blankschtein and R. Langer,(1995) A mechanistic study of ultrasonically—enhanced transdermal drug delivery, J. Pharm. sci., , 84, 697 706.
7- Goldberg BB, Goodman GA, Clearfield HH.(1970). : Evaluation of ascites by ultrasound. Radiology; 96:15-22
8- Kristensen JK, Beumann B, Kuehl E (1971): Ultrasonic scanning in the diagnosis of splenic haematomas. Acta Chir Scand; 137:653—657
9-Asher WM, Parvin S, Virgilio RW, et al: Echographic evaluation of splenic injury after blunt trauma. Radiology (1976) ; 118:411-415
10-Mayron R, Gaidop PE, Plummer D, et al 1988: Echocardiography performed by emergency physicians: Impact on diagnosis and therapy. Ann Emerg Med; 17:150-151
11- Tiling T, Bouillon B, Schmid A, etal . (1990): Ultrasound in blunt abdominothoracic trauma. In: Blunt Multiple Trauma. Borden J, Algoewer M, Reudi T (Eds).
12-New York, Marcel Dekker, McKenney MG, Martin L, Lentz K, et al (1996): 1,000 consecutive ultrasounds for blunt abdominal trauma. J Trauma; 40:607-610
13- Jarowenko DG, Hess RM, Herr MS, et al (1989): Use of ultrasonography in the evaluation of blunt abdominal trauma. J Trauma; 29: 1031—1037
14-Society for Academic Emergency Medicine: Ultrasound Position Statement, 1991. Available at: http://www.saem.org
15-Mateer J, Plummer D, Heller M, et al.(1994) : Model curriculum for physician training in emergency ultrasonography. Ann Emerg Med;
16- Heller M, Jehle D Ultrasound in Emergency Medicine. Philadelphia, WB Saunders, Rothlin MA, Naf R, Amgwerd M, Candinas
17- D, Frick T, Trentz O (1993). Ultrasound in blunt abdominal and thoracic trauma. Journal of Trauma; 34: 488-495.
18-Hoffmann R, Neriich M, Muggia-Su11am M et al (1992). Blunt abdominal trauma in cases of multiple trauma evaluated by ultrasonography: A prospective analysis of 291 patients. Journal of Trauma; 32: 452— 458.
19-Liu M, Lee CH, P'Eng FK (1993). Prospective comparison of diagnostic peritoneal lavage, computed tomographic scanning, and ultrasonography for the diagnosis of blunt abdominal trauma. Journal of Trauma; 35: 267-270.
20-Ma OJ, Mateer JR, Ogata M, Kefer MP, Wittmann D, Aprahamian C.(1995) Prospective analysis of a rapid trauma ultrasound examination performed by emergency physicians. Journal of Trauma; 38: 879-885.
21-Barnett SB, Kossoff G, Edwards MJ.(1994). Is diagnostic ultrasound safe? Medical Journal of Australia; 160: 33-37.
22-Grassi W. (2021) Clinical evaluation versus ultrasonography: who is the winner? J Rheumatol 30: 908—909

23-Kane D., Balint P.v., Sturrock R.D. (2021) Ultrasonography is superior to clinical examination in the detection and localization of knee joint effusion in rheumatoid arthritis. J Rheumatol 30: 966—971
24-Brown A.K., Conaghan P.G., Karim Z., Quinn M.A., Ikeda K., Peterfy c.G., et al. (2008) An explanation for the apparent dissociation between clinical remission and continued structural deterioration in rheumatoid arthritis. Arthritis Rheum 58: 2958-2967.
25-Szkud1arek M., Court-Payen M., Jacobsen S., Klarlund M., Thomsen H.s., Ostergaard M. (2021) Interobserver agreement in ultrasonography of the finger and toe joints in rheumatoid arthritis. Arthritis Rheum 48: 955-962.
26-Schee1 A.K., Hermann K.G., Kahier E., Pasewaldt D., Fritz J., Hamm B., et al. (2005) A Novel ultrasonographic synovitis scoring system suitable for analyzing finger joint inflammation in rheumatoid arthritis. Arthritis Rheum 52: 733—743
27-Bajaj S., Lopez-Ben R., Oster R., Alarcon G.S. (2017) Ultrasound detects rapid progression of erosive disease in early rheumatoid arthritis: a prospective longitudinal study. Skeletal Radiol 36: 123-128.
28-Wakefie1d R.J., Gibbon W.W., Conaghan P.G., O'Connor P., McGonag1e D., Pease C., et al. (2000) The value of sonography in the detection of bone erosions in patients with rheumatoid arthritis: a comparison with conventional radiography. Arthritis Rheum 43: 2762-2770.
29-Hmamouchi 1., Bahiri R., Srifi N., Aktaou S., Abouqal R., Hajjaj-Hassouni N. (2018) A comparison of ultrasound and clinical examination in the detection of flexor tenosynovitis in early arthritis. BMC Musculoskelet Disord 12: 91.
30-Mcqueen F., Beckley V., Crabbe J., Robinson E., Yeoman S., Stewart N. (2005) Magnetic resonance imaging evidence of tendinopathy in early rheumatoid arthritis predicts tendon rupture at six years. Arthritis Rheum 52: 744-751.
31-Grassi W., Filippucci E., Farina A., Cervini C. (2000) Current comment sonographic imaging of tendons. Arthritis Rheum 43: 969—976.
34-Lillegraven S., Boyesen P., Hammer H.B Ostergaard M., Uhlig T., Sesseng S., et al. (2018) Tenosynovitis of the extensor carpi ulnaris tendon predicts erosive progression in early rheumatoid arthritis. Ann Rheum Dis 70: U2049-U2199.
35-Fe1son D.T. (2004) An update on the pathogenesis and epidemiology of osteoarthritis. Radiol Clin North Am 42: 1-9, v.
36-Hi11 CT, Gale D.G., Chaisson Skinner K., Kazis Gale M.E,, et al. (2019) Knee effusions, popliteal cysts, and synovial thickening: [Ksociznion with knee pain in osteoarthritis. J Rheumatol 28: 1330-1337.
37-Hayashi D., Roemer F.W., Katur A., Felson D.T., Yang S.O., Alomran F., et al. (2018) Imaging of synovitis in osteoarthritis: current status and outlook. Semin Arthritis Rheum 41: 116—130.
38-Sok010ff L. (1957) The pathology of gout. Metabolism Clin Exp 6: 230-243.
39-Grassi W., Meenagh G., Pascual E, Filippucci E. (2020) "Crystal Clear" - sonographic assessment of gout and calcium pyrophosphate deposition disease. Semin Arthritis Rheum 36: 197—202.
40-Levin D., Nazarian L.N., Miller T.T., O'Kane P.L., Feld R.I., Parker L, et al. (2005) Lateral epicondylitis of the elbow: US findings. Radiology 237: 230-234.
41-Park G.Y., Lee s.M., Lee M.Y. (2008) Diagnostic value of ultrasonography for clinical medial epicondylitis. Arch Phys Med Rehabil 89: 738— 742
42- Neye H, Ensberg D, Rauh P, Peitz U,
Mönkemüller K, Treiber G, Klauck S, Malfertheiner P, Rickes S. (2010). Impact of high-resolution transabdominal ultrasound in the diagnosis of complications of Crohn's disease. Scand J Gastroenterol.;45:690—695. doi: 10.3109/00365521003710190.
43-H011erbach S, Geissler A, Schiegl H, Kullrnann F, Lock G, Schmidt J, Schlegel J, Schoelmerich J, Andus T.(1998) The accuracy of abdominal ultrasound in the assessment of bowel disorders. Scand J doi: 10.1080/00365529850172575
44-Astegiano M, Bresso F, Cammarota T, Sarno A, Robotti D, Demarchi B, Sostegni R, Macchiarella V, Pera A, Rizzetto M.(2019) Abdominal pain and bowel dysfunction: diagnostic role of intestinal ultrasound. Eur J Gastroenterol doi: 10.1097/00042737-201908000-00009.
45-Kralik R, Trnovsky P, Kopåéová M. (2013) Transabdominal ultrasonography of the small bowel. Gastroenterol Res doi: 10.1155/2013/896704.
46-Cammarota T, Sarno A, Robotti D, Bonenti G, Debani P, Versace K, Astegiano M, Pera A. US evaluation of patients affected by IBD: how to do it, methods and findings. Eur J Radiol.
47-Ny1und K, Hausken T, Gilja OH. (2010) Ultrasound and inflammatory bowel disease.
Ultrasound 10.1097/RUQ.Ob013e3181ce0929.
48-Piscag1ia F, Noisøe C, Dietrich CF, Cosgrove DO, Gilja OH, Bachmann Nielsen M, Albrecht T, Baroni L, Bertolotto M, Catalano O, et al. (2018) The EFSUMB Guidelines and Recommendations on the Clinical Practice of Contrast Enhanced Ultrasound (CELTS): update on non-hepatic

applications
49-R. Rosa and F. Monteiro, (2014) "Performance analysis of speckle ultrasound image filtering", Comput. Methods Biomech. Biomed. Eng. Imag. Vis., vol. 4, pp. 1-9,
50- Jul. S. H. Contreras Ortiz, T. Chiu and M. D. Fox, (2017) "Ultrasound image enhancement: A review", Biomed. Signal Process. Control, vol. 7, pp. 419-428.
51-J. Dainty, (1970) "Some statistical properties of random speckle patterns in coherent and partially coherent illumination", Optica Acta Int. J. Opt., vol. 17, no. 10, pp. 761-772, Oct.
52-J. W. Goodman, (1979) "Some fundamental properties of speckle", J. Opt. Soc. Amer., vol. 66, no.
11, pp. 1145-1150,
53-K. Singh, S. K. Ranade and C. Singh, (2017) "A hybrid algorithm for speckle noise reduction of ultrasound images", Comput. Methods Programs Biomed., vol. 148, pp. 55-69, Sep.
54-J. Zhang, C. wang and Y. Cheng, (2015) "Comparison of despeckle filters for breast ultrasound images", Circuits Syst. Signal Process., vol. 34, no. 1, pp. 185-208, Jan.
55-A. Thakur and R. Anand, (2005) "lmage quality based comparative evaluation of wavelet filters in ultrasound speckle reduction", Digit. Signal Process., vol. 15, no. 5, pp. 455-465,
56-A. Fernåndez-Caballero and J. M. Vega-Riesco, (2020) "Determining heart parameters through left ventricular automatic segmentation for heart disease diagnosis", Expert Syst. Appl., vol. 36, no. 2, pp. 2234-2249
57- Alexander BH, Olsen GW. (2017) Bladder cancer in perfluorooctanesulfonyl fluoride manufacturing workers Ann Epidemiol 17:471—8
58-Mwashambwa MY, Yongolo SC. (2018) The effectiveness of ultrasound in the diagnosis of bladder turnours at the Muhimbili National Hospital, Dar es Salaam, Tanzania Tanzan J Health Res. 13:1-6
59-Amling CL. (2019) Diagnosis and management of superficial bladder cancer Curr Probl
60-Amling CL. (2019) Diagnosis and management of superficial bladder cancer Curr Probl
61 -Stamatiou K, Papadoliopoulos I, Dahanis S, Zafiropoulos G, Polizois (2020) The accuracy of ultrasonography in the diagnosis of superficial bladder tumors in patients presenting with hematuria Ann Saudi
62-Mwashambwa MY, Yongolo SC. (2018) The effectiveness of ultrasound in the diagnosis of bladder tumours at the Muhimbili National Hospital, Dar es Salaam, Tanzania Tanzan J Health
63-Datta SN, Allen GM, Evans R, Vaughton KC, Lucas MG. (2017) Urinary tract ultrasonography in the evaluation of haematuria — A report of over 1,000 cases Ann R coli surg
64- Silva-Ramos M, Louro N, Versos R, Cavadas V, Marcelo F.) Does 3D ultrasound enhance the diagnosis of bladder tumours in patients with haematuria? ISRN Urol.:158437