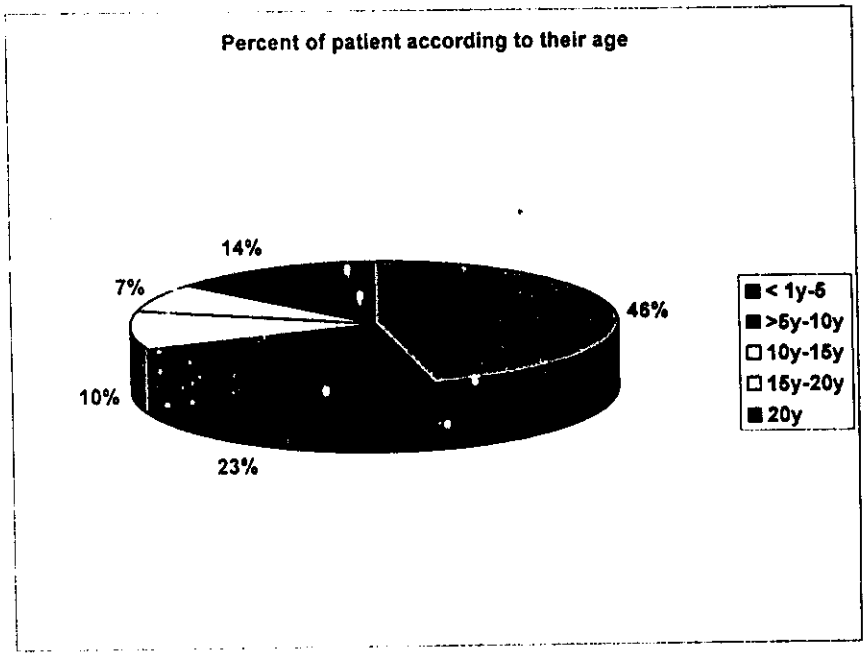

Results

RESULTS

All patients in this study were subjected to ultrasonography (U.S), ted tomography (CT) and magnetic resonance imaging (MRI) ıation to identify the location of the undecended testes, then the were confirmed by laparoscopy or open surgery.

and graph (1) : Age Incidence

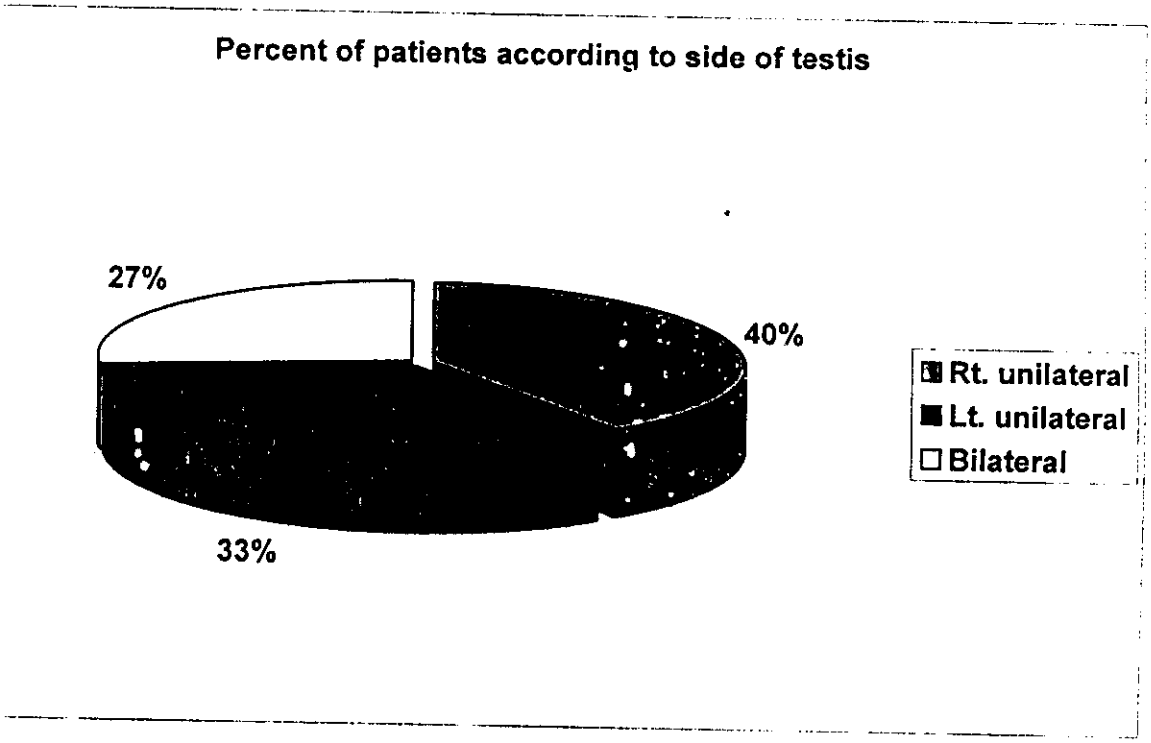
ıge	Unilateral (Rt.)	Unilateral (Lt.)	Bilateral	Total
5	8	4	2	14
.0y	1	3	3	7
.5y	2	1	-	3
20y	-	1	1	2
	1	1	2	4
	12	10	8	30



This work included 30 patients with suspected 38 undescended sticles, their ages ranged from 1-26 years old and highest incidence :tween 1-5 years old (table 1).

Table and graph (2) : Side of undescended testis

Side	Rt. unilateral	Lt. unilateral	Bilateral	Total
No. of patients	12	10	8	30
Percentage	40%	33%	27%	100%



This graph shows that , out of 30 patients, 12 had the undescended testis on the right side (40%), 10 had the undescended testis on the left side (33%) and 8 had bilateral undescended testes (27%).

Table (3) : Ultrasonographic results in predicting Undescended testis

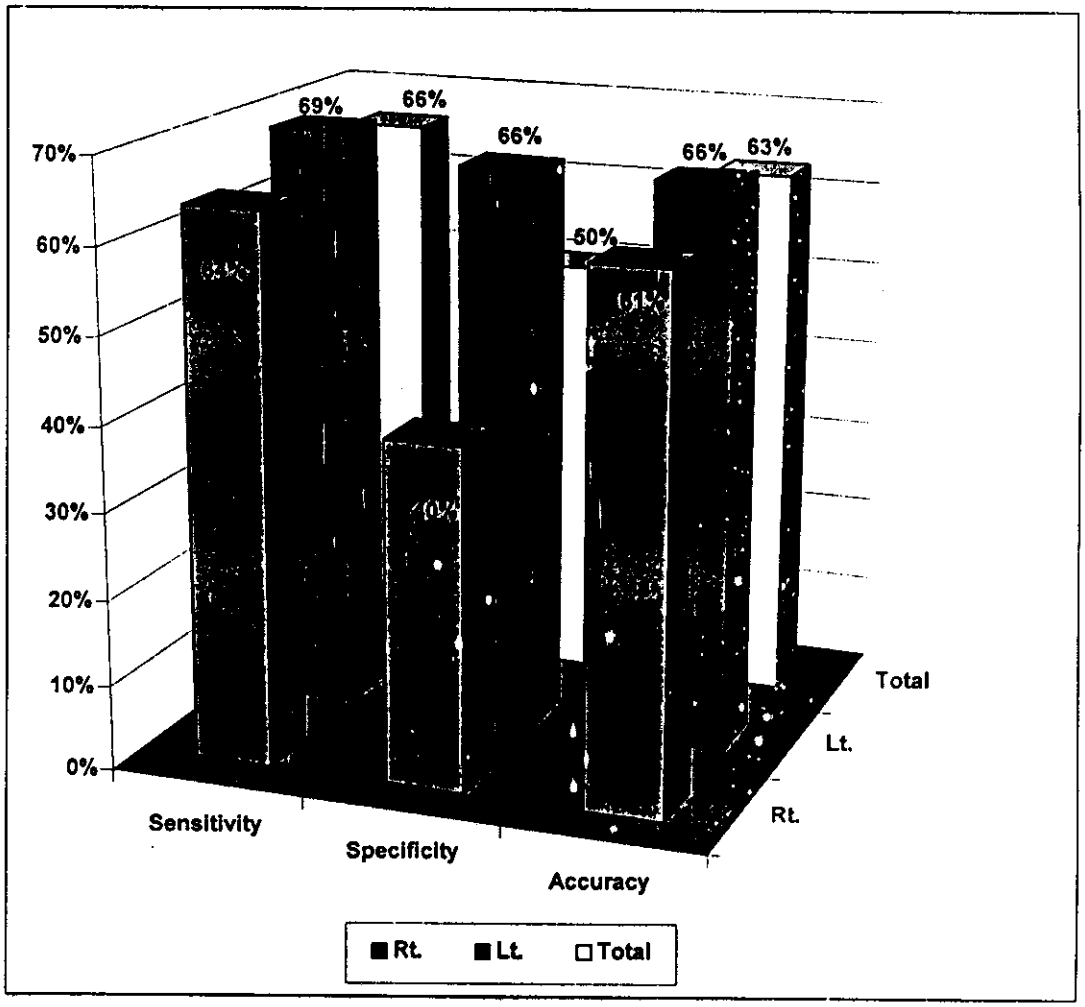
Side	US +ve	Truly +ve	False +ve	US -ve	Truly -ve	False -ve
Rt.	14	11	3	8	2	6
Lt.	10	9	1	6	2	4
Total	24	20	4	14	4	10

By US examination, data presented in table (3) show that 24 testes were detected in the already mentioned sites (14) at the Rt. and (10) at the left, patients underwent exploration and open surgery showed that out of 24 identified testes by US 20 of them were truly positive, while the remaining 4 were false positive (two cases out of 4 were identified at the inguinal canal. By exploration, they were diagnosed correctly as inguinal LNs, and the actual 2 testes were intra-abdominal. The remaining 2 testes were shown by US at the internal inguinal ring by laparoscopy, they proved to be intra-abdominal).

The remaining non visualized testes by US examination (14) underwent exploration and open surgery showed 4 out of the 14 testes were truly negative (not seen) and the other (10) testes were false negative .6 out of 10testes were intra-abdominal, the remaining 4 cases divided into 2 at the internal ring and last 2 were intra-canalicular

Table (4) and graph (3) : Specificity, sensitivity and accuracy rate of ultrasonograpy

Side	Sensitivity	Specificity	Accuracy
Rt.	64%	40%	61%
Lt.	69%	66%	66%
Total	66%	50%	63%



Data presented in table (4) and graph (3) show that sensitivity rate of ultrasonogarphy was about 66% while, specificity rate was 50 % and the accuracy rate was 63%.

ɔle (5) : Ultrasonographic findings of undescended testis according to site of testis.

cation of testis	No. of testes after exploration	Lt.	Rt.	Total
ɪra-abdominal	11	1	1	2
ɛrnal ring of inguinal canal	5	2	2	4
ɪra canalicular	14	7	7	14
ɛlow external inguinal ring.	5	2	2	4
ɜnishing testis	3	0	0	0
ɔtal	38	12	12	24

Data of table (5) show that out of 24 testes, 14 testes were found in ıe inguinal canal (12 of them true +ve., 1 false +ve. 1 false-ve) 4 testes ɾere found at the orifice of internal inguinal ring (2 of them true + ve, 2 ɜlse + ve), 4 testes were found below the external inguinal ring and nly2 testes of the intra-abdominal; testes could be detected by ıltrasonography on both sides of urinary bladder.

Table (6) : US picture of already identified 24 testes.

Item	Number
Site:	
• Intra-abdominal	2
• Internal ring	4
• Interacanalicular	14
• External ring	4
Size:	
• Normal	6
• Small size	14
• Atrophic	4
Echogenicity:	
• Isoechoic	24
• Hypoechoic	-
• Mixed echogenicity	-

By US examination, data presented in table (6) show that 6 out of the 20 testes were normal in size (in comparison to the normal one) and the other 14 showed small size, 3 testes were vanishing (they were atrophic). All the 20 testes showed homogenous iso-echoic texture.

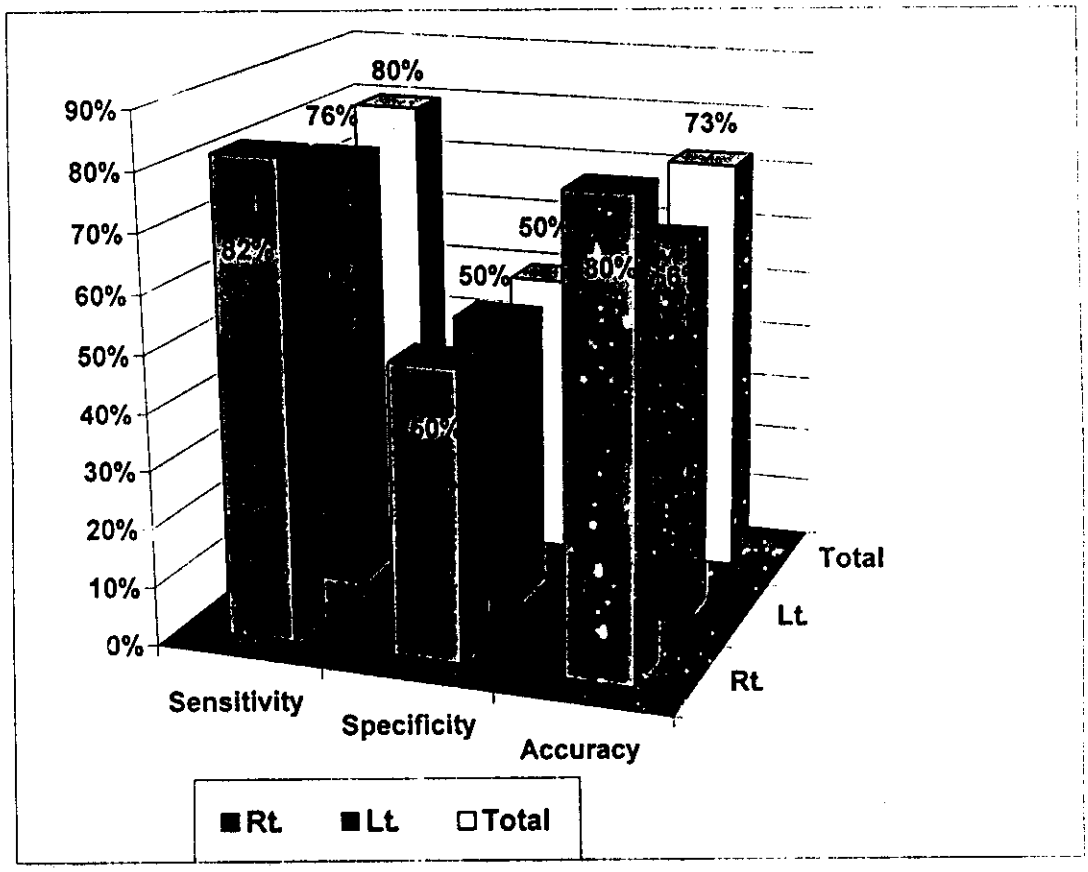
Table (7) : CT results in predicting Undescended testis.

Side	CT +ve	Truly +ve	False +ve	CT -ve	Truly -ve	False -ve
Rt.	16	14	2	5	2	3
Lt.	12	10	2	5	2	3
Total	28	24	4	10	4	6

By CT examination, data presented in table (7) show that 28 testes were detected in the already mentioned sites (16) at the Rt. and (12) at the left, patients underwent exploration and open surgery showed that out of 28 identified testes by CT 24 of them were truly positive, while the remaining 4 were false positive.

Table (8) and graph (4) : Specificity, sensitivity and accuracy rate of CT.

Side	Sensitivity	Specificity	Accuracy
Rt.	82%	50%	80%
Lt.	76%	50%	66%
Total	80%	50%	73%



Data presented in table (8) and graph (4) show that sensitivity rate of computed tomography was about 80% while, specificity rate was 50 % and the accuracy rate was 73%.

) : CT findings of undescended testis according to site of testis.

of testis	No. of testes after exploration	Lt.	Rt.	Total
lominal	11	2	2	4
ring of inguinal canal	5	2	3	5
alicular	14	7	7	14
xternal inguinal rin.	5	1	4	5
ıg testis	3	0	0	0
	38	12	16	28

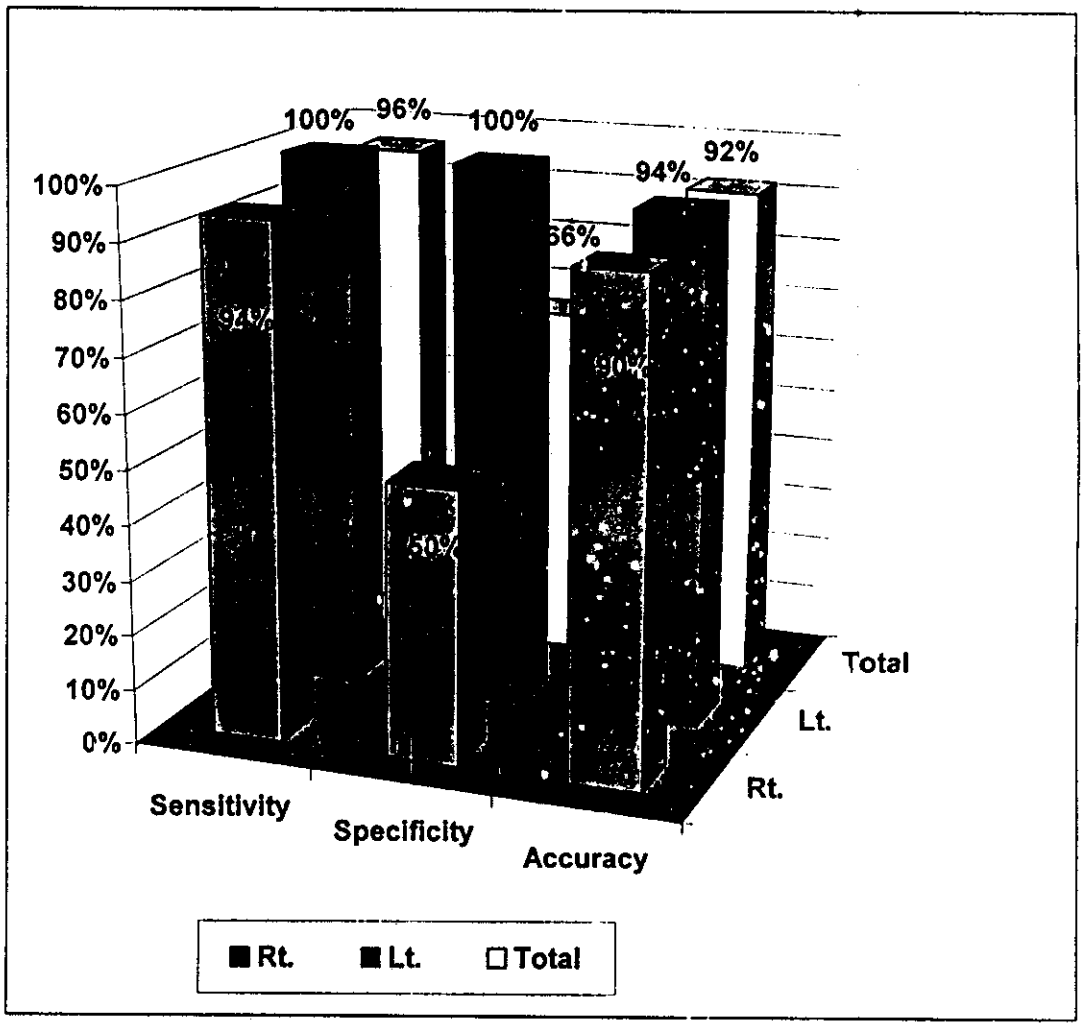
10) : MRI results in predicting undescended testis.

	MRI +ve	Truly +ve	False +ve	MRI -ve	Truly -ve	False -ve
	18	16	2	3	2	1
	15	15	0	2	2	0
	33	31	2	5	4	1

By MRI examination data presented in table (10) : how that 23 were identified, 31 of them were truly positive and the remaining were false positive. The rest of the 38 testes (5testes) were not ied by MRI, after laparoscopy one of the 5 was false negative was intra-abdominal in site.

Table (11) and graph (5) : Sensitivity, specificity, and accuracy of MRI

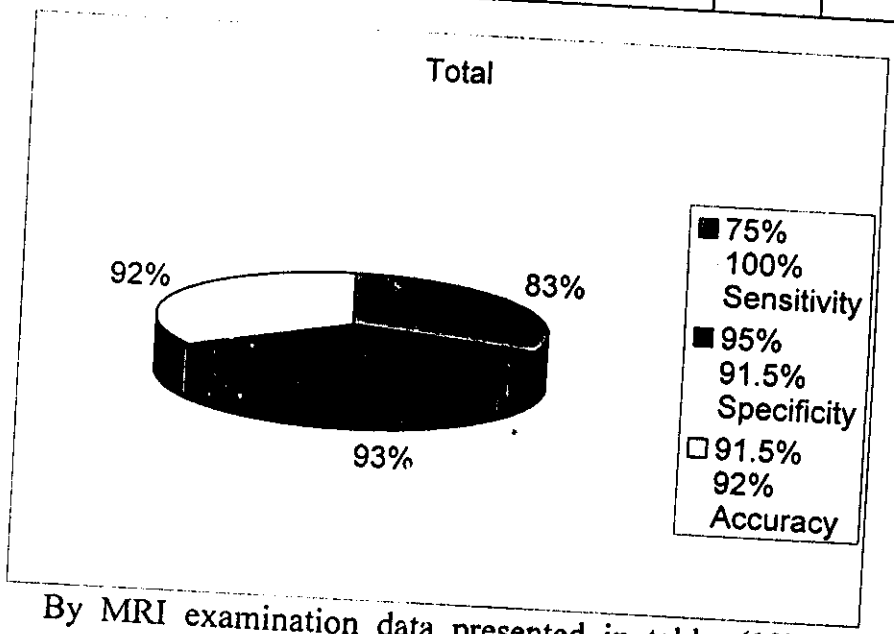
Side	Sensitivity	Specificity	Accuracy
Rt.	94%	50%	90%
Lt.	100%	100%	94%
Total	96%	66%	92%



Data presented in table (11) and graph (5) show that sensitivity rat of MRI was about 96% while, specificity rate was 66% and the accuracy rate was 92%.

Table (12) and graph (6) : MRI results of undescended testis according to site of testis.

Location of testis	No. of testes after exploration	Lt.	Rt.	Total
Intra-abdominal	11	4	4	8
Internal ring of inguinal canal	5	2	2	4
Intra canalicular	14	9	7	16
Below external inguinal ring.	5	2	3	5
Vanishing testis	3	0	0	0
Total	38	17	16	33



By MRI examination data presented in table (12) and graph (6) show that out of 38, testes 16 were detected in inguinal canal. The discrepancy between the MRI and laparoscopic findings was due to the 2 testes which were false positive (seen in the canal) while they were enlarged inguinal LNs laparoscopy showed that they were intra-abdominal 5 testes at internal orifice of the inguinal canal, 5testes below the external ring of the inguinal canal and 8 testes were found intra-abdominally.

Table (13) : Picture of undescended testis by MRI.

Signal intensity	T1W1	T2W1
Isointense	33	1
Hypo intense	-	2
Hyper intense	-	30
Mixed	-	-

Data in (Table 13) show that out of 33 testes detected by MRI, All of them (33testes) demonstrated homogenous intermediate signal intensity(iso-intense) on T1 weighted images, while on T2 weighted images, 30 testes demonstrated high signal intensity, 2 testes with low signal intensity and one testis of isointense signal . This reduction in the intensity in the last 3 testes was due to testicular atrophy and fibrosis which proved after exploration.

Table (14) : Sites of intra-abdominal eight undecended testes by MRI

Site:	Number of testes
At both sides of UB	5
Rt.	3
Lt.	2
Superior and lateral to the internal inguinal ring	3
Rt.	2
Lt.	1

The examined intra-abdominal eight testes diagnosed by MRI v seen as 5 testes at both sides of the UB.(3 at the right and 2 at the and remaining 3testes were seen near the internal inguinal ring (2 Rt. and 1 at the Lt.)

Table (15) : Size of Undescended testis by M.R.I.

Size	Rt.	Lt.	Total
Normal	16	14	30
Atrophic	2	1	3
Enlarged	-	-	-

Data in (table 15) show the size of undescended testis. Out of 33 testes detected by MRI 30 testes were of normal size in correlation with the other side (16 Rt. And 14Lt). While there were 3 testes with small size due to atrophic changes. (2 Rt. And 1 Lt.).

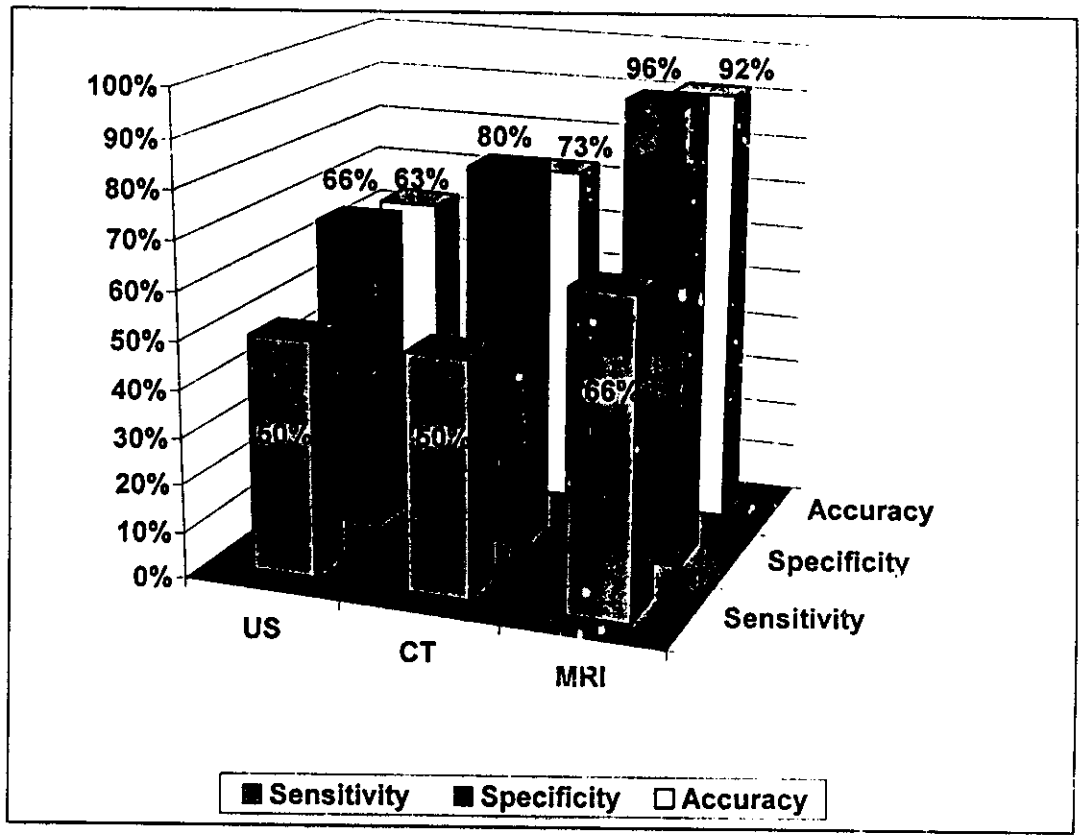
Table (16) : Sites of the undescended testis after exploration.

Sites	Unilateral Lt.	Unilateral Rt.	Total	Percentage
Intra-abdominal	6	6	11	28%
Internal ring of inguinal canal	2	3	5	12%
Intra canalicular	6	8	14	38%
Below external inguinal ring.	3	2	5	12%
Vanishing testis	2	1	3	10%

Follow up at the thirty patients studied after exploration by either laparoscopyor open surgery it is interest to mention that out of 38 testes studied, 11 testes (28%) were detected intra-abdominally, while 5 testes (12%) were found at the internal orifice of the inguinal canal 4 testes (38%) were found in the inguinal canal,5 testes (12%) were found below the external inguinal ring and 3 testes (10%) were not detected.

Table (17) and graph (7) : Specificity, Sensitivity and Accuracyrate of the used diagnostic modalities.

Diagnostic modalities	US	CT	MRI
Specificity	50%	50%	66%
Sensitivity	66%	80%	96%
Accuracy	63%	73%	92%



This graph shows Specificity, sensitivity and accuracy of ultrasonogarphy, computed tomography and magnetic resonance imaging as different diagnostic modalities for undescended testis are shown in table (17) and graph (7). The results of the over all accuracy of these diagnostic modalities were found to be 64% for Ultrasonogarphy, 73% for computed tomography and 92% for MRI. It is interest to mention that

accuracy of magnetic resonance imaging exceeded that of asonography by 29 % and computed tomography by 19%.

Specificity, sensitivity and accuracy of ultrasonography, computed iography and magnetic resonance imaging as different diagnostic dalities for undescended testis are shown in (Table 17). The results of over all accuracy of these diagnostic modalities were found to be 63% ultrasonography, 73% for computed tomography and 92% for MRI. It interest to mention that the accuracy of magnetic resonance imaging ceeded that of ultrasonography by 29 % and computed tomography by %.