RESULTS

Results

Demographic characteristics of the patients

19 (95%) patients were females and one male 5% . Their ages ranged from 19-65 years with a mean of 45.4 ± 11.18 years. The disease duration ranged from 3-20 years with a mean of 8.66 ± 5.76 years, whereas the shoulder pain duration ranged from 0.5-4 years with a mean of 1.93 ±1.07 years (table 1) .

Table (1) : Demographic characteristics of patients (n=20)

Parameters	Range	Mean	SD
Age (years)	19-65	45.4	±11.18
Disease duration (years)	3-20	8.66	±5.76
Shoulder pain duration (years)	0.5- 4	1.93	±.07

Concerning the clinical characteristics of the patients

The morning stiffness ranged from 0-120 with a mean of 52.33 ± 34.03 minutes. The Ritchie articular index among the patients ranged from 4 to 28 with a mean of 15.40 ± 6.09, whereas the number of swollen joints ranged from 0 to 21 with a mean of 6.50 ± 6.26. The hand grip ranged from 50-140 mmHg with a mean of 93.33 ± 23.24 mmHg. The mean disease grade activity (MDGA) ranged between 2-3 with a mean of 2.73 ± 0.44 (Table 2)

Table (2) : Clinical characteristics of patients

Parameters	Range	Mean	SD
Morning stiffness (min)	0-120	52.33	34.03
Articular index	4-2	15.40	6.09
Number of swollen joints	0-21	6.50	6.26
Hand grip (mmHg)	50-140	93.33	23.24
MDGA*	2-3	2.73	0.44

* Mean disease grade activity

Laboratory characteristics of the patients

Haemoglobin % (Hb%) ranged from 9.70-13.50 gm% with a mean of 11.30 ± 1.19 gm%. The mean ESR levels were 67.53 ± 26.97mm/1st hour ranging from 20 - 131 mm/1st hour. 50% of the patients showed positive C-reactive protein (CRP). While 70% of the patients showed positive rheumatoid factor (RF) .

Table (3) :Laboratory findings of the patients .

Parameters	Range	Mean	SD
Hemoglobin (gm%)	9.7 – 13.5	11.3	1.19
White blood cells (1000/cm)	4.6-12.5	7.12	2.39
Platelets count (1000/Cmm	190-399	302.70	58.11
E.S.R (First hour in mm)	20-131	67.53	26.97

Results of clinical examination of the shoulder

The flexion of shoulder ranged between 70°-165° with a mean of 136.0° ± 33.99° whereas the extension ranged from 20°60° with a mean of 46.67° ± 10.66°. The abduction ranged between 0°-170° with a mean of 124° ± 48.87 whereas adduction ranged between 10°-50° with a mean of 37.67° ± 11.94'. The internal rotation ranged between 20°-70° with a mean of 53° ± 13.68° whereas external rotation ranged between 30°-100°

with a mean of 74.67° ± 25.42°. However, the most affected movements were abduction and internal rotation (Table 4).

Table (4): Results of clinical examination of the shoulder joints among patients under study (n = 20) .

Parameters	Range	Mean	SD
Flexion	70-165	136.0	33.99
Extension	20-60	46.67	10.66
Abduction	0-170	124.00	48.87
Adduction	10-50	37.67	11.94
Internal rotation	20-70	53.00	13.68
External rotation	30-100	74.67	25.42

Ultrasonographic evaluation :

Abnormal sonographic leisons were found in 19 patients (95%), the most common

1) **Bone erosions** of the humeral head detected in 19 patient (95%) while erosion detected by PR 4 patients (20%) .

The US detected 4 glenohumeral joints with larsen grade 0.

2 gleno humeral joints with larson grade (1) , 4 with larsen grade 2 , 5 glenohumeral with larson grade 3 , 3 glenohumeral with Larsen grade 4 and 1 with Larsen grade 5 .

2) **Soft tissue** changes detected in 13 patients (65%) .

- Three patient (15%) was found to have suacromical subdeltoid bursitis .
- Six patients (30%) supraspinatus tendonitis .
- One patient (5%) infraspinatus tendinintis .

- One patient (5%) Rotator cuff tear .
- One patient (5%) was found to have Biceps Tendinitis .
- One patient (5%) was found to have joint effusion .

3) As regards subchondral cyst US detected subcondral cyst in three patient (15%) while in PR subcondral cyst detected in ten (50%)

Fig (15) Comparison between of Humeral head erosions cycts and soft tissue by P.R. and US (n=20)

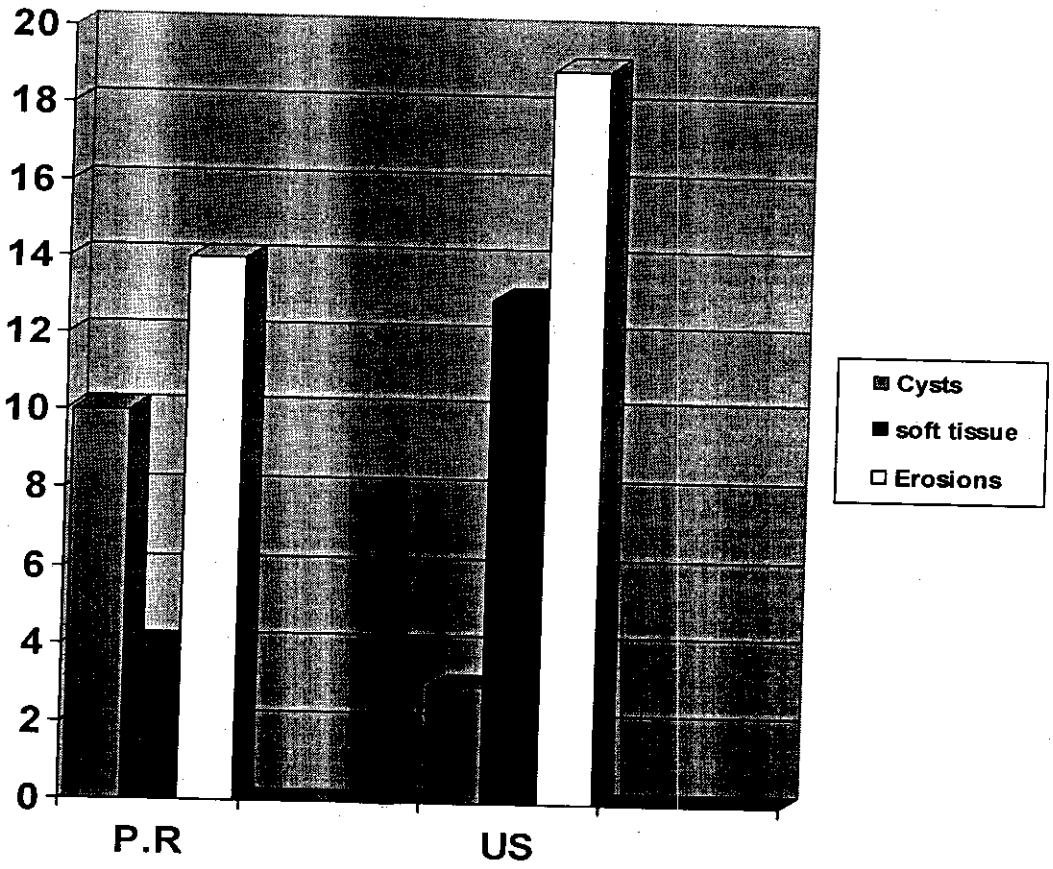


Table (5) : comparison between plain radiography (PR) and ultrasonography (US) finding in the humeral head .

Parameters	Plain radiography		Ultrasonography		"t"	P	Sig.
	Mean	SD	Mean	SD			
1- Superior aspect							
- Greater tuberosity small erosions.	0.133	0.345	0.666	0.922	3.395	<0.01	HS
- greater tuberosity superficial erosions.	0.100	0.305	0.033	0.182	1.000	>0.05	NS
- greater tuberosity large erosions	0.333	0.546	0.166	0.379	1.542	>0.05	NS
2-Antero-medial aspect							
- Antero-medial small erosions .	0.300	0.749	2.000	1.701	4.958	<0.01	HS
- Antero-medial superficial erosions.	0.233	0.430	0.333	0.479	1.000	>0.05	NS
- Antero-medial large erosions.	0.20	0.484	0.600	1.037	2.048	>0.05	NS
3- Postero-lateral aspect							
- Postero-lateral small esrions.	0.100	0.305	1.633	1.564	5.206	<0.01	HS
- Postero-lateral superficial esrions.	0.133	0.345	0.233	0.430	1.140	>0.05	NS
- Postero-lateral large erisons .	0.000	0.000	0.533	1.000	3.084	<0.01	HS
Total no.of erisons of all aspects of the humeral head	1.533	1.613	6.200	4.080	6.946	<0.01	HS
Cysts	0.500	0.108	0.167	0.379	3.010	<0.01	HS
Soft tissue	0.233	0.504	3.360	3.090	5.694	<0.01	HS

Fig. (16) : Comparison between PR and US for various parameters under study (n=20)

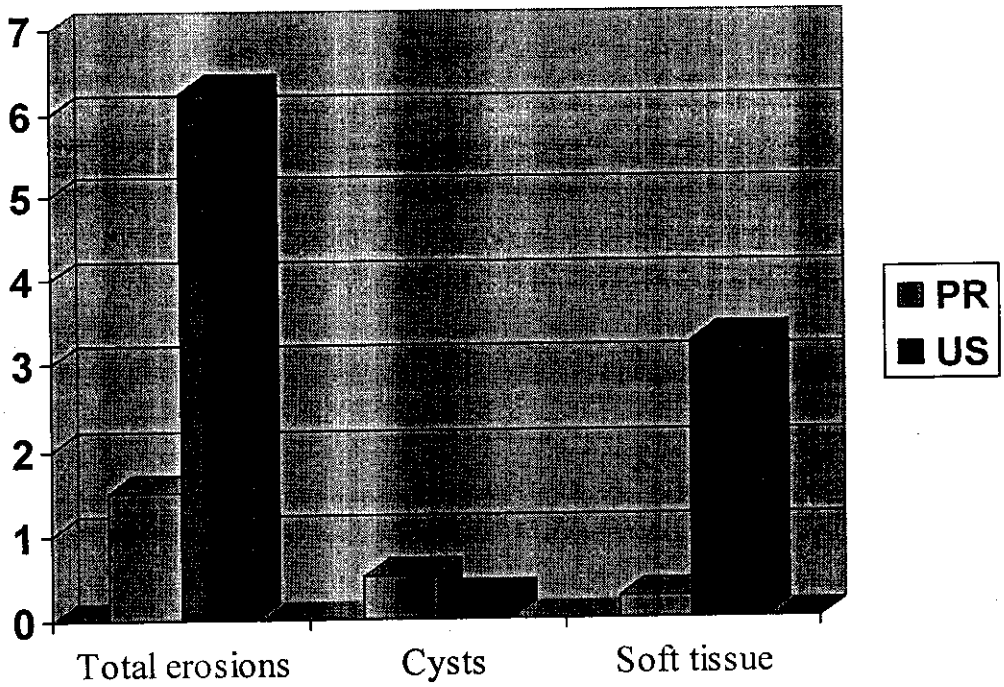


Table (6) : correlation between disease duration and other clinical parameters .

Parameters	**"r"**	**P-value**	**Significance**
Shoulder pain duration	0.395	>0.05	Not significant
Grade of disease activity	0.124	>0.05	Not significant
Hand grip	-0.169	>0.05	Not significant
Flexion	-0.104	>0.05	Not significant
Extension	-0.114	>0.05	Not significant
Abduction	-0.057	>0.05	Not significant
Adduction	0.149	>0.05	Not significant
Internal rotation	-0.179	>0.05	Not significant
External rotation	0.063	>0.05	Not significant
Rheumational factor	0.333	>0.05	Not significant
CRP	0.310	>0.05	Not significant

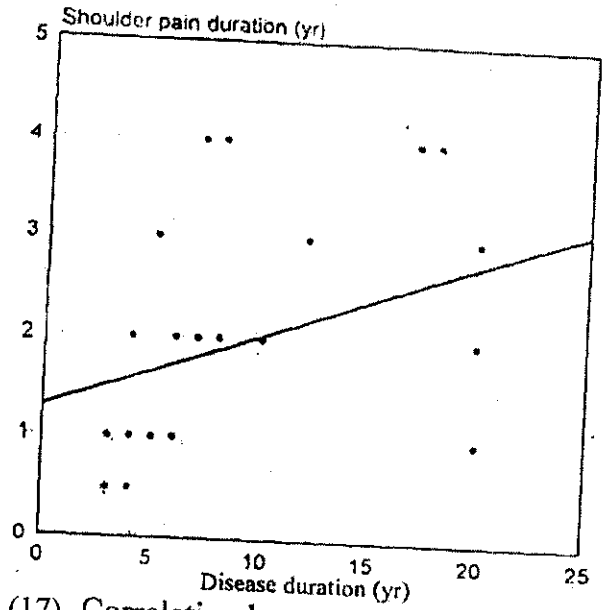


Fig (17) Correlation between disease duration and shoulder pain duration

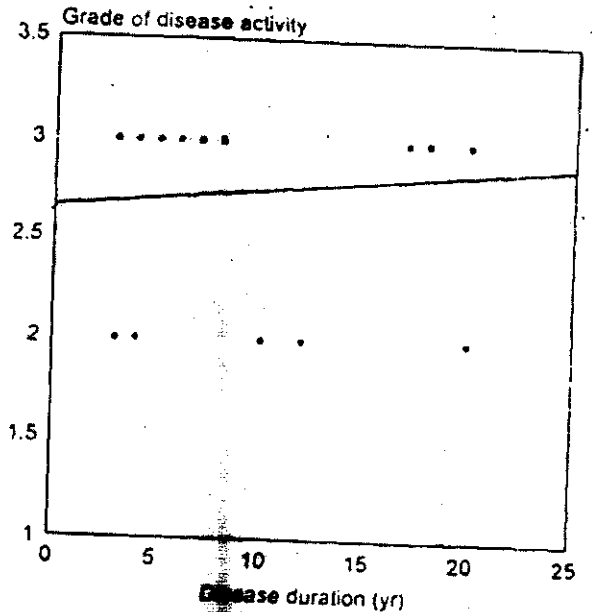


Fig (18) Correlation between disease duration and grade of disease activity

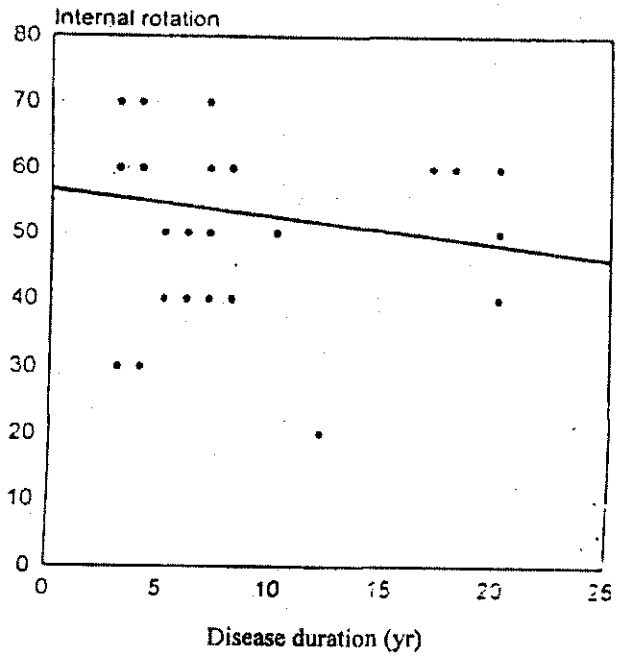


Fig (19) Correlation between disease duration and internal rotation

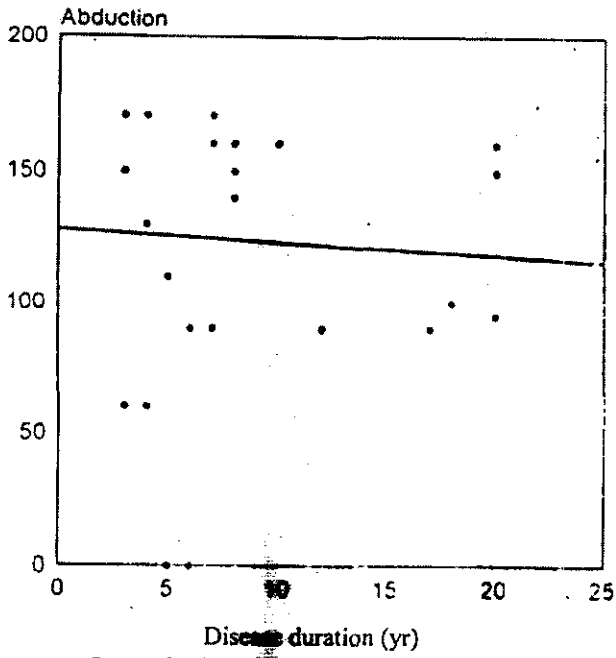


Fig (20) Correlation between disease duration and abduction

US detected erosions

US detected erosions was correlated with disease duration, shoulder pain duration, grading of disease activity, hand grip, all shoulder movements, rheumatoid factor and CRP. The significant correlation are those mentioned below.

Correlation between US detected erosions and flexion of the affected shoulder joint revealed a highly significant correlation ($r=0.465$, $P<0.01$). Correlation between US detected erosions and extension of the affected shoulder joint revealed a highly significant correlation ($r=-0.465$, $P<0.01$).

Correlation between US detected erosions and abduction of the affected shoulder joint revealed a highly significant correlation ($r=-0.514$, $P<0.01$).

Correlation between US detected erosions and adduction of the affected shoulder joint revealed a highly significant correlation ($r= 0.576$, $P<0.01$).

On the other hand a non-significant correlation was found between US detected erosions and disease duration, shoulder pain duration, grading of disease" activity, hand grip, internal rotation of the affected, shoulder joint, external rotation of the affected shoulder joint, rheumatoid factor and CRP. (table 5 , 7 , 8 , 9 , 10 , 11) .

Table (7) : Correlation between US detected erosions and other clinical and laboratory parameters .

Parameters	"r"	P	Significance
Disease duration	-0.180	>0.05	Not significant
Shoulder pain duration	-0.343	>0.05	Not significant
Grade of disease activity	-0.178	>0.05	Not significant
Hand grip	-0.064	>0.05	Not significant
Flexion	-0.465	>0.01	Highly significant
Extension	-0.465	>0.01	Highly significant
Abduction	-0.514	>0.01	Highly significant
Adduction	-0.576	>0.01	Highly significant
Internal rotation	-0.319	>0.05	Not significant
External rotation	-0.192	>0.05	Not significant
Rheumational factor	-0.296	>0.05	Not significant
CRP	0.190	>0.05	Not significant

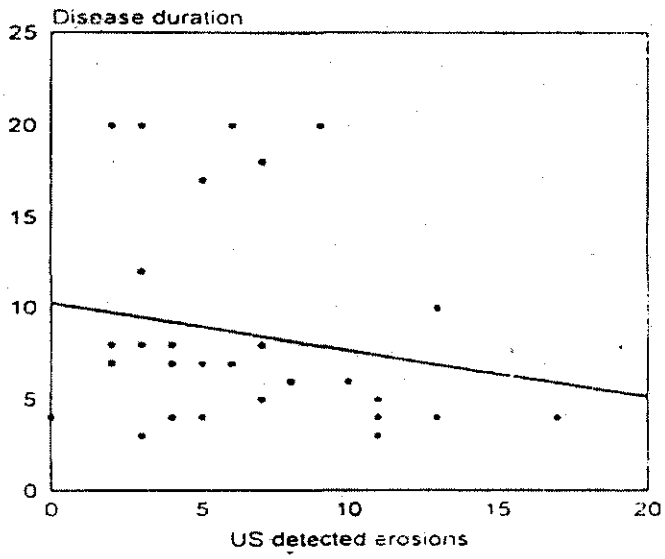


Fig (21) Correlation between US detected erosions and disease duration

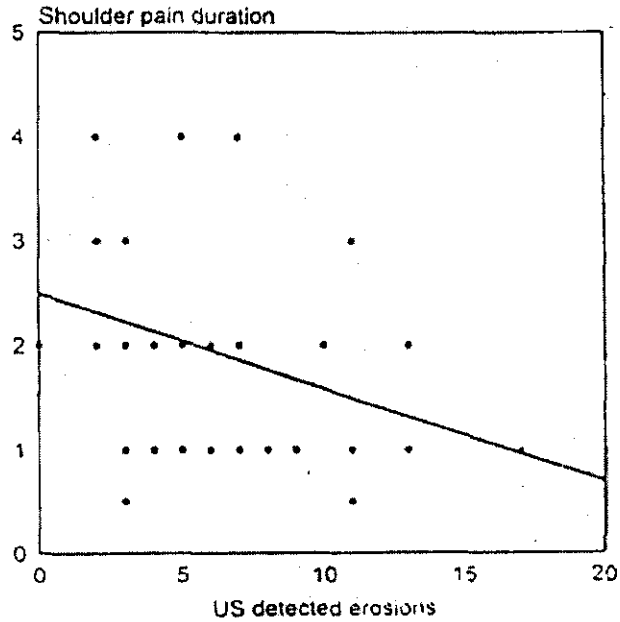


Fig (22) Correlation between US detected erosions and shoulder pain duration

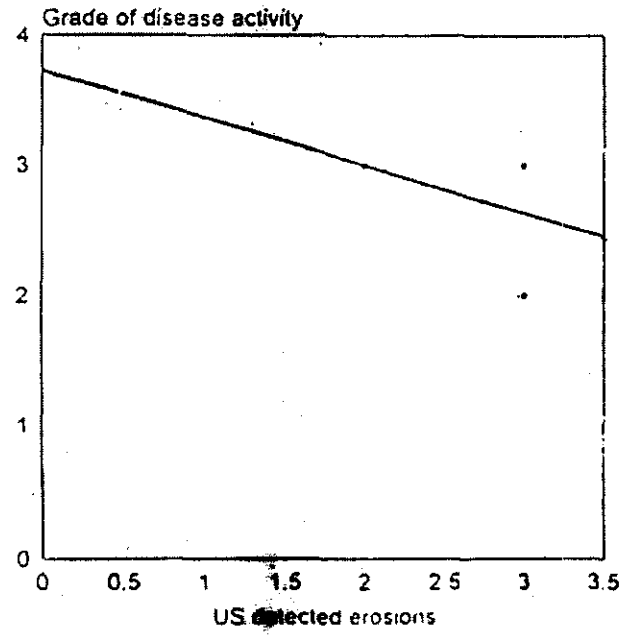


Fig (23) Correlation between US detected erosions and grade of disease activity

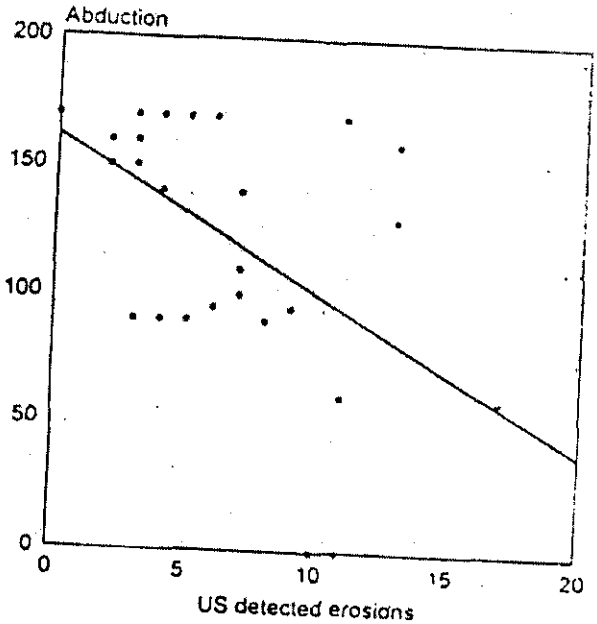


Fig. (24) Correlation between US detected erosions and abduction

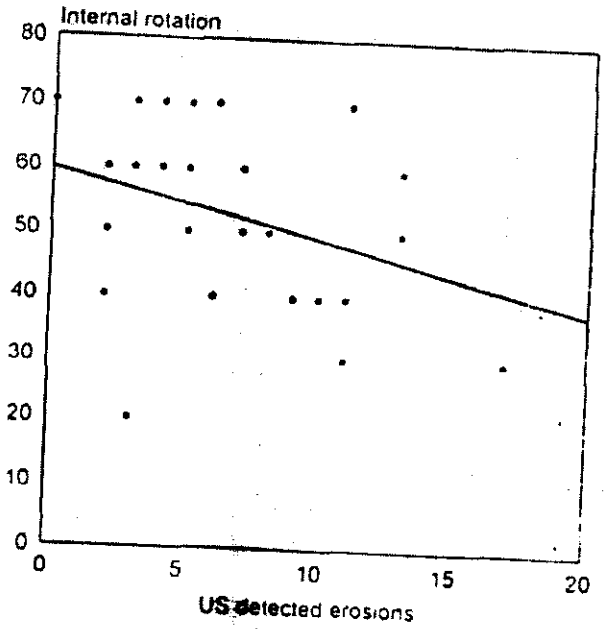


Fig. (25) Correlation between US detected erosions and internal rotation

Table (8) : correlation between US detected Cysts and other clinical and laboratory parameters :

Parameters	**"r"**	**P**	**Significance**
Disease duration	-0.130	>0.05	Not significant
Shoulder pain duration	-0.489	>0.05	Not significant
Grade of disease activity	-0.135	>0.05	Not significant
Hand grip	-0.222	>0.05	Not significant
Flexion	-0.147	>0.05	Not significant
Extension	-0.242	>0.05	Not significant
Abduction	-0.140	>0.05	Not significant
Adduction	-0.063	>0.05	Not significant
Internal rotation	-0.166	>0.05	Not significant
External rotation	0.060	>0.05	Not significant
Rheumational factor	0.155	>0.05	Not significant
CRP	0.239	>0.05	Not significant

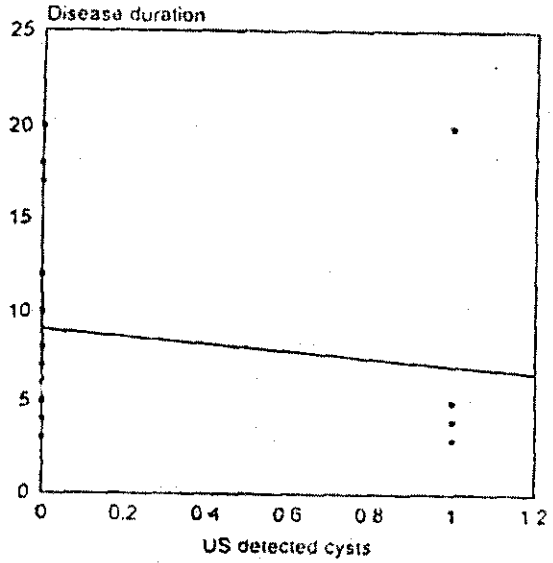


Fig (26) : Correlation between US detected cysts and disease duration

(18)

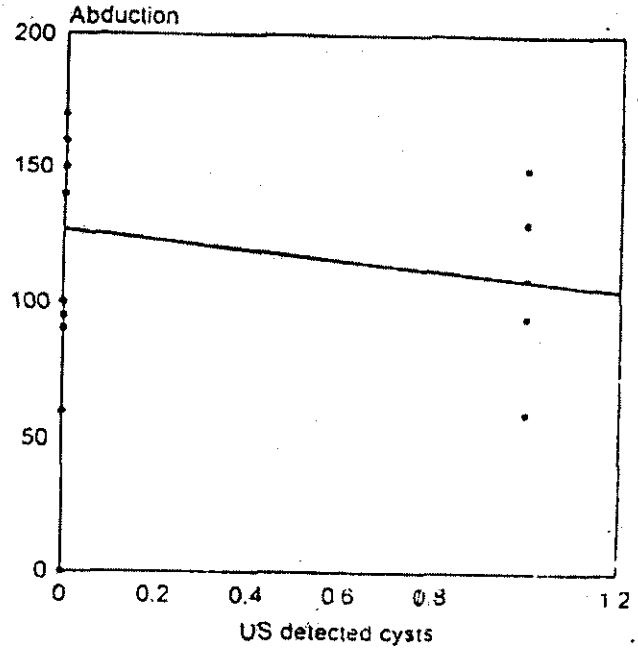


Fig. (27) Correlation between US detected cysts and abduction

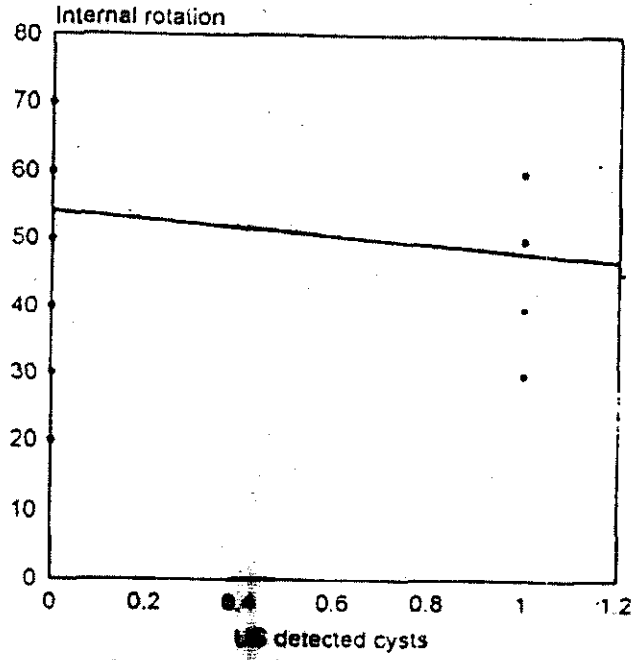


Fig. (28) Correlation between US detected cysts and internal rotation

Table (9) : correlation between US detected soft tissue lesions and other clinical and laboratory parameters :

Parameters	**"r"**	**P**	**Significance**
Disease duration	-0.215	>0.05	Not significant
Shoulder pain duration	-0.107	>0.05	Not significant
Grade of disease activity	-0.246	>0.05	Not significant
Hand grip	-0.310	>0.05	Not significant
Flexion	-0.063	>0.05	Not significant
Extension	-0.185	>0.05	Not significant
Abduction	-0.165	>0.05	Not significant
Adduction	-0.200	>0.05	Not significant
Internal rotation	-0.051	>0.05	Not significant
External rotation	-0.023	>0.05	Not significant
Rheumational factor	0.206	>0.05	Not significant
CRP	0.003	>0.05	Not significant

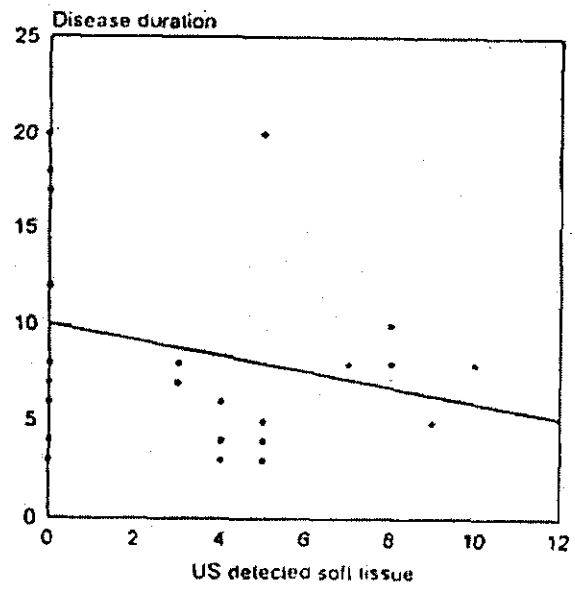


Fig (29) : correlation between US detected soft tissue and disease duration

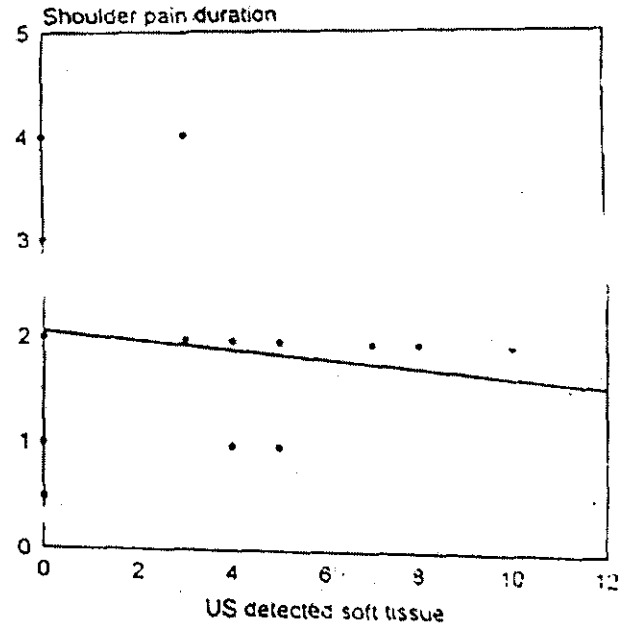


Fig. (30) Correlation between US detected soft tissue and shoulder pain duration

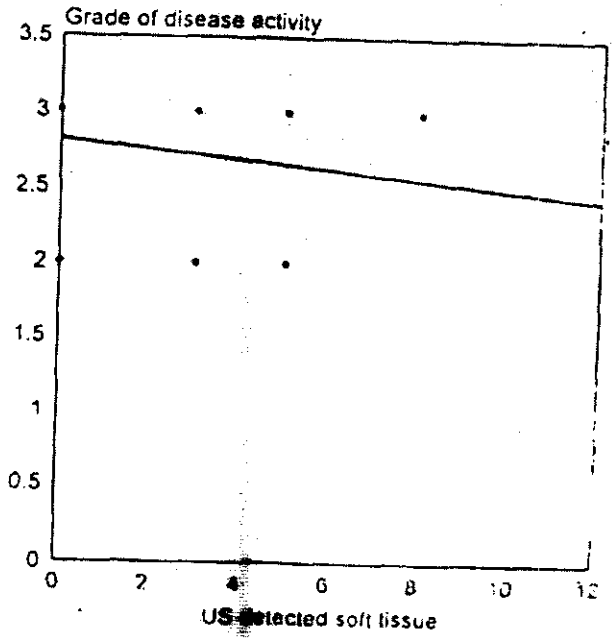


Fig (31) Correlation between US detected soft tissue and grade of disease activity

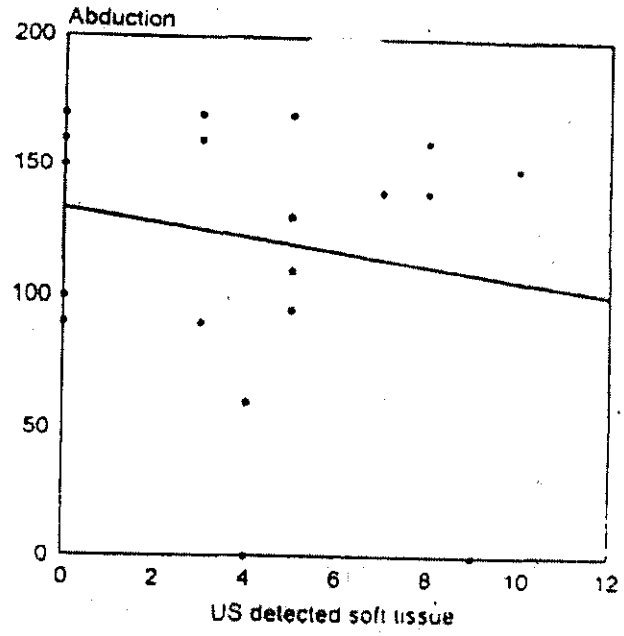


Fig (32) Correlation between US detected soft tissue and abduction

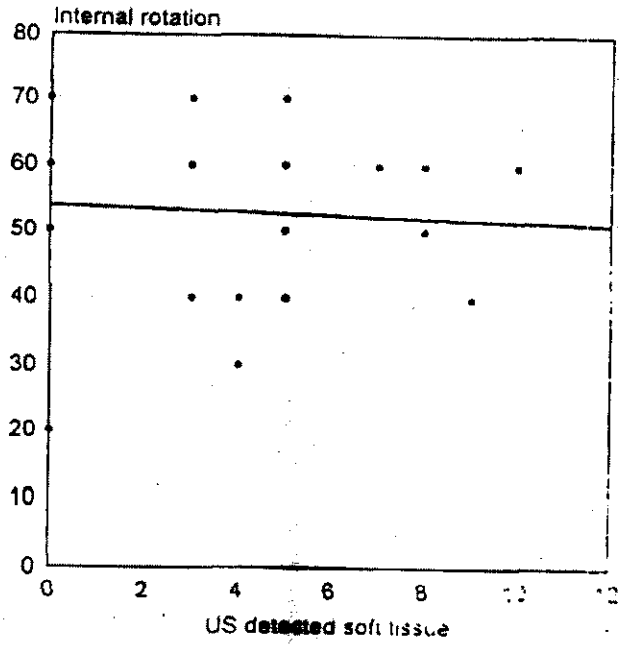
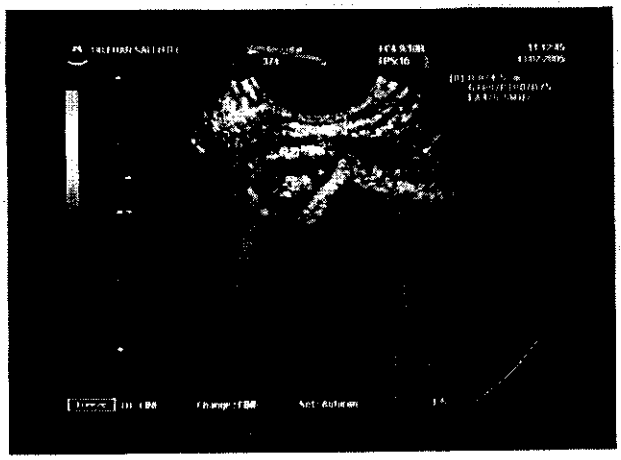
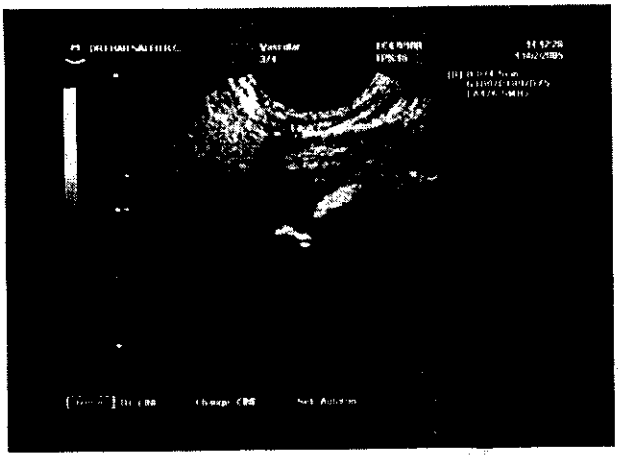


Fig. (33) Correlation between US detected soft tissue and internal rotation

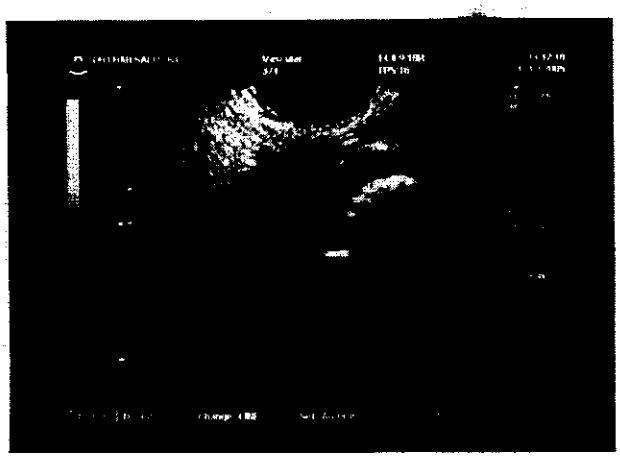
Fig. (34): US to right shoulder revealed (normal)



No erosive changes

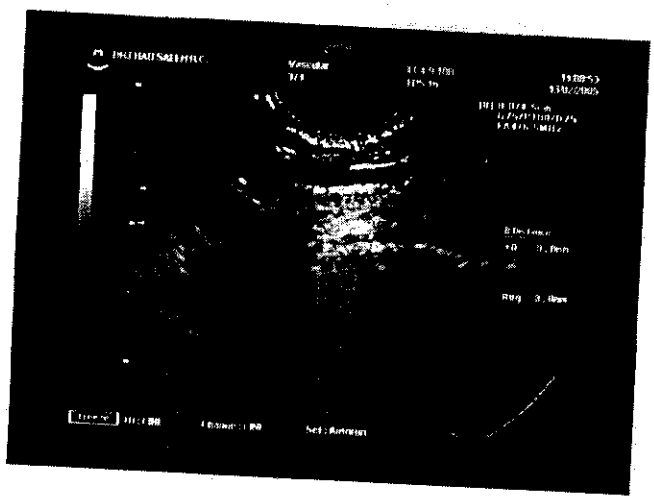


No oestoporotic changes

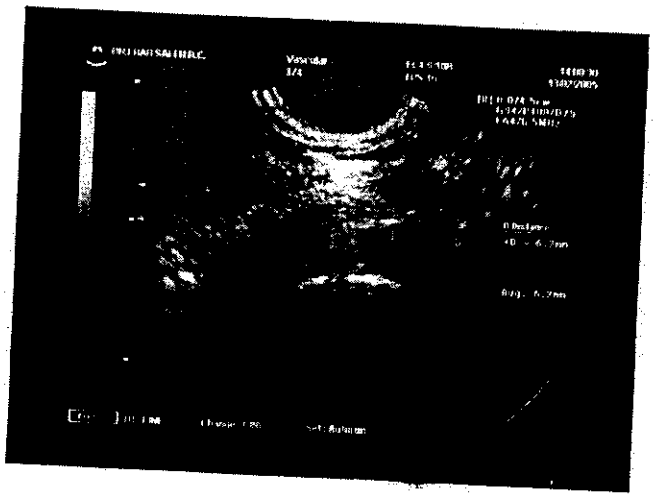


Normal soft tissue.

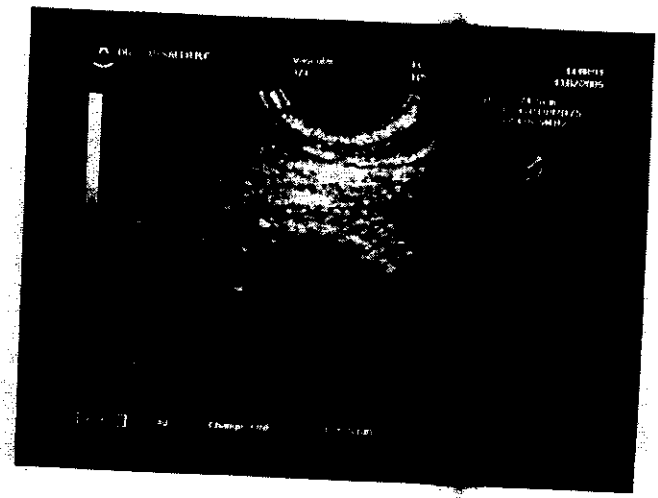
Fig. (35): US to right shoulder revealed



Evidence of erosive changes in the greater tubercle, humeral head, neck and articular surface.

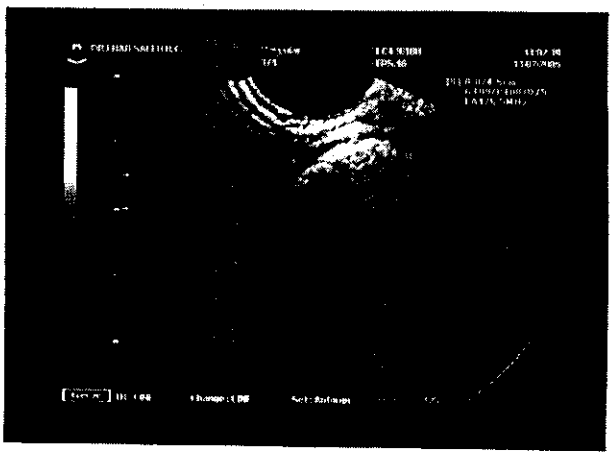


Mild oestoprotic changes

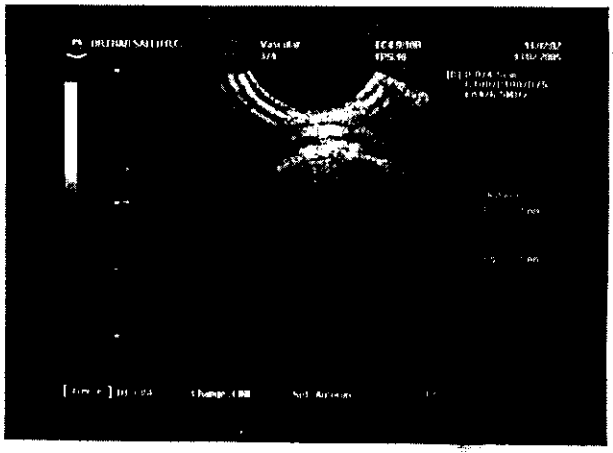


Subacromial sub-deltoid persitis.

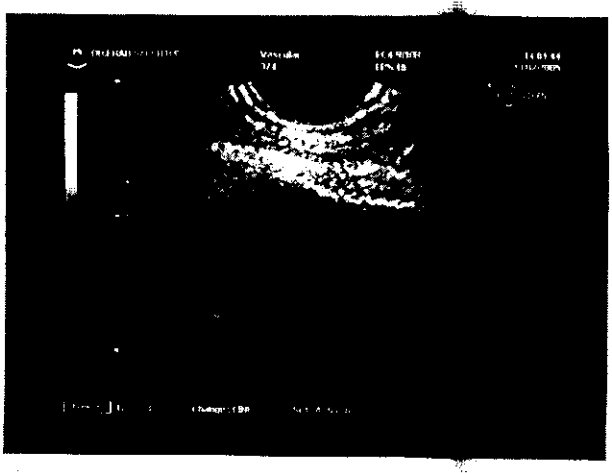
Fig. (36): US to Left shoulder revealed



Erosive changes in the humeral head, neck and articular surface.

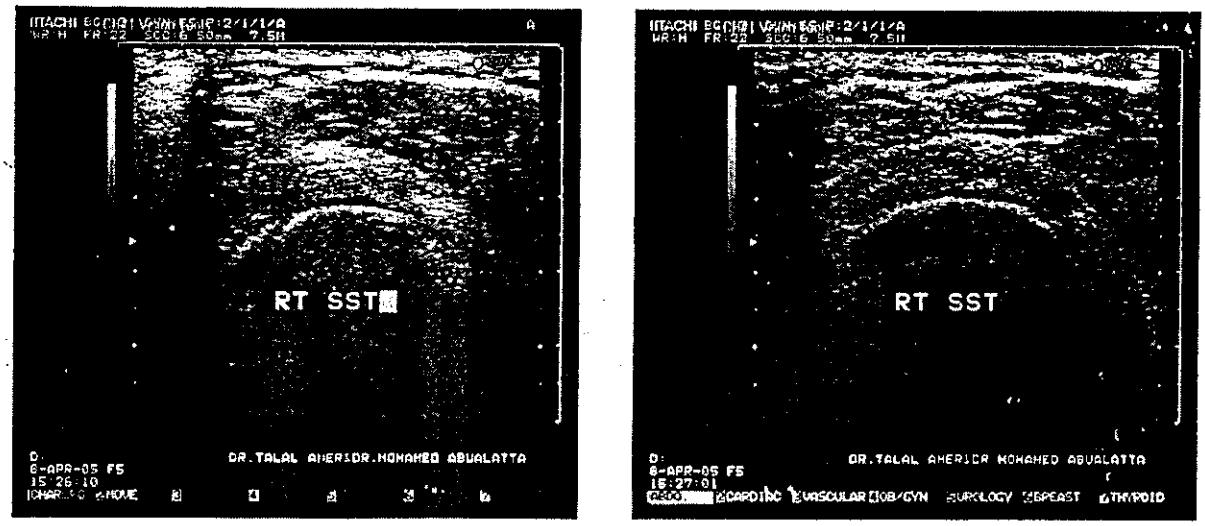


Mild oestoporotic changes.



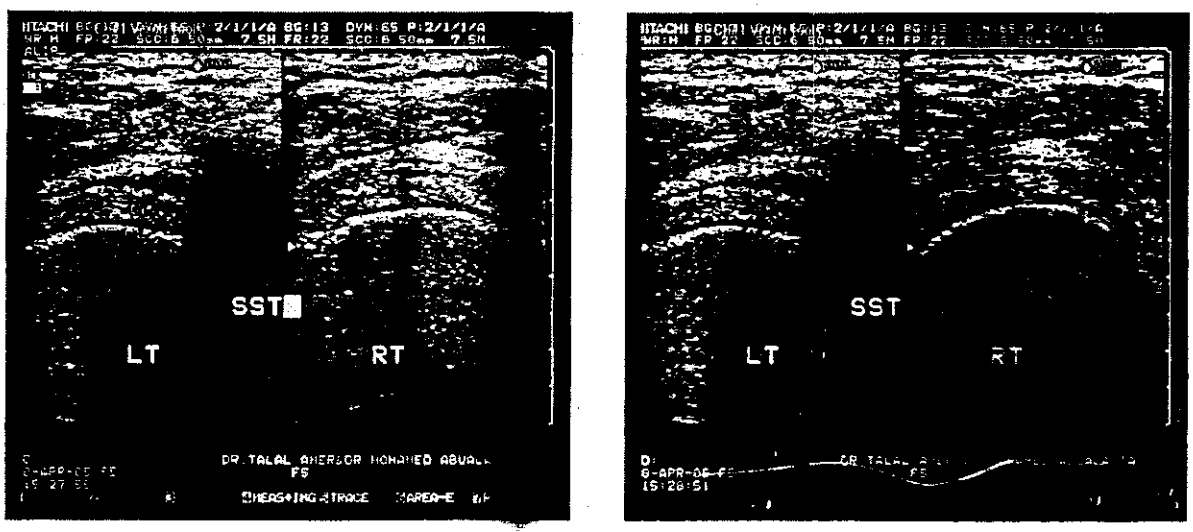
Sub-acromial sub-deltoid persitis.

Fig. (37): US of right shoulder



Revealed increased thickness and echogenicity (recent tear) of rotator cuff tendon.

Fig. (38): Us to both shoulder



Revealed normal rotator cuff tendon on left shoulder compared to right shoulder