RESULTS

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Forty five patients attending the outpatient clinic of Benha teaching and Benha University Hospitals comprised the material of this work.

These patients were diagnosed as having rheumatoid arthritis (RA), according to the revised criteria of the American College of Rheumatology (ACR), [Formerly the American Rheumatism Association] ***(Arnette et al., 1988).***

These patients were classified randomly into a study group (A) and a control group (B).

Group (A) : Included 30 patients suffering from RA who received methotrexate (MTX) therapy. They were 27 females (90%) and 3 males (10%), whose ages ranged between 18-54 years (mean 39.8 ±10.8 years). These patients were treated with oral MTX 7.5 - 12.5 mg/week for 3 months. (Table,5).

Group (B) : Included 15 patients with RA who have been treated with other drugs. They were 13 females (86.7%) and 2 males (13.3%), whose ages ranged between 20-55 years (mean 39 ± 9.8 years).

These patients were considered as controls. (Tables, 6 &8).On initial assessment, both groups were matched as regards to :

Their duration of the disease, clinical parameters as well as laboratory studies, (Tables, 9 and 10).

Results of the clinical study of group (A) before and after MTX therapy, (Table, 7) :

The duration of the disease ranged between 1-10 years (mean 4.2 ± 2.6 years).

The duration of morning stiffness ranged between 30-180 minutes (mean 95.7 ± 50.1 minutes) on initial assessment, while after 3 months of MTX therapy it ranged between 10-60 minutes (mean 12.8 ± 13.8 minutes). A highly significant difference was observed ($P < 0.001$).

Articular index scoring ranged between 2-30 joints (mean 15.2 ± 6.1 joints) initially, while after 3 months it was 0-10 joints (mean 3 ± 2.7 joints). A highly significant difference was also observed ($P < 0.001$).

Functional capacity grading included the three grades : 14 patients in grade I (46.7%), 14 patients in grade II (46.7%) and 2 patients in grade III (6.7%) initially, while after 3 months of MTX therapy 20 patients were in grade I (66.7%), 9 patients in

grade II (30%) and one patient in grade III (3.3%). A highly significant difference was obtained (P <0.001).

The mean grip strength measured for both hands ranged between 22.5 - 135mmHg. (mean 75.5 ± 36.8 mmHg). On final evaluation it was 32.5 - 170 mmHg (mean 98.1 ±36.3 mmHg). A highly significant difference was obtained (P < 0.001).

Results of the laboratory investigations of group (A) before and after MTX therapy, (Table, 7) :

The erythrocyte sedimentation rate (ESR), ranged from 40-110mm/first hour (mean 69.1±15.5 mm) on initial assessment, while after 3 months of MTX therapy it was 10-60mm (mean 27 ± 15.6 mm). A significant difference was observed (P < 0.001).

The rheumatoid factor was positive in 22 patients (73.3%) and negative in 8 patients (26.7%), with no difference obtained after MTX treatment.

The level of hemoglobin (Hb%) in group (A), ranged between 9-16.2 gm % (mean 11.4 ±1.8 gm %). After three months of MTX therapy, this level ranged from 6-15 gm% (mean 11.04 ±1.5 gm %).
A non significant difference was observed (P>0.05).

The white blood cells count (WBCs) in group (A) ranged from 4500-9100 /mm^3 (mean 6770 ± 1130 /mm^3).

This count ranged from 3100-8600/mm^3 (mean 5910 ± 1220/mm3) after three months.

A non significant difference was observed (P> 0.05). The platelet count on initial evaluation was 140.000-310.000/mm^3 (mean 195.962 ±30.400/mm^3). After three months of MTX therapy, this count ranged between 110.000-390-000/mm^3 (mean 187.000 ±55.0/mm^3). A non significant difference was observed (P>0.05).

The serum level of glutamic oxaloacetic transaminase (SGOT) ranged from 10-31.1 units (mean 23.4 ± 3.9 units). This level increased > 40 units in only 7 patients (23.3%) after MTX therapy, while it ranged from 19-155 units (mean 41.3 ± 26.9 units) in all the patients with a highly significant difference (P < 0.001).

The serum level of glutamic pyruvic transaminase (SGPT) ranged from 17-33 units (mean 25.6 ± 4.5 units) before MTX therapy. After 3 months, it ranged from 23-130 units (mean 43.2 ± 22.3 units), with a highly significant difference (P < 0.001). This level was > 45 units in only 8 patients (26.7%).

The serum level of alkaline phosphatase (AP), ranged from 3.3-9.6 KA units (mean 5.7 ± 1.8 KA units) on initial evaluation, while after MTX therapy it ranged from 4-12 KA

units (mean 6.8 ± 2.2 KA units) with a significant difference, but it never reached > 13 KA units in any patient.

Results of the clinical and laboratory studies of group (A) and group (B) after 3 months; (Tables, 11 & 12) :

On comparing the follow up values of group (A) and group (B) patients we found that:

The mean duration of morning stiffness in patients of group (A) was 12.8 ± 13.8 minutes, while that of group (B) was 66 ± 15.6 A significant difference was observed between both groups ($P < 0.005$).

The mean articular index of group (A) was 3 ± 2.7 joints, while it was 9.7 ± 0.8 joints in group (B). A significant difference was found between both groups ($P < 0.005$).

The mean grip strength of group (A) was 98.1 ± 36.3 mmHg. While that of group (B) was 87.7 ± 4 mmHg. A non significant difference was obtained between both groups ($P > 0.05$).

The mean ESR in group (A) was 27 ± 15.6 mm, while it was 45.7 ± 23.3 mm in group (B). A significant difference was observed between both groups ($P < 0.005$).

After three months of therapy, the mean Hb% in group(A) was 11.04 ±1.5 gm %, while it was 11.2±1.7 gm % in group(B).

A non significant difference was observed between both group (P>0.05).

The mean WBCs was 5910 ± 1220 /mm^3 in group (A). In group (B) this count was 6506.7 ± 1350 / mm^3. A non significant difference was observed between both groups (P>0.05).

The mean platelet count was 187.000 ± 55.0 /mm^3 in group (A), while it was 194-333 ± 21.00 /mm^3 in group (B). A non significant difference was observed between both groups (P>0.05) Table (13).

The mean level of SGOT in group (A) was 47.3 ±26.9 units, while it was 20.9 ± 5.6 units in group (B). A significant difference was obtained between both groups (P < 0.005). A rise of serum SGOT level > 40 units was not reported in any patient of group (B) Table (8).

The mean level of SGPT in group (A) was 43.2 ± 22.3 units, while it was 25 ± 5.5 units in group (B). A significant difference was observed between both groups (P < 0.005). A level > 45 units was not recorded in any patient of group (B).

The mean level of AP was 6.8 ± 2.2 KA units in group (A), while it was 5.8 ± 1.7 KA units in group (B). A non significant difference was observed between both groups (P > 0.05).

RA patients who were treated with MTX showed some side effects. Two cases had gastritis (6.7%), one case had skin rashes (3.3%), one case had pneumonitis (3.3%), Six patients (20%), showed elevations of both SGOT and SGPT two patients (6.7%) showed elevations of SGPT alone, while one patient (3.3%) showed elevation of SGOT alone.

No other side effects have been detected, (Table,14). These patients continued the therapy up to 3 months, where discontinuation of MTX was considered.

Table (5): Personal characteristics and some clinical and laboratory variables of RA patients (group A) treated with MTX (before and after treatment)

Case No	Age ys	Sex	Duration of disease (ys)	Morning stiffness minutes		Articular index		Functional capacity		Mean grip strength mm/Hg		ESR 1st h. (mm)		SGOT N.(40u)		SGPT N.(45u)		AP N.3-13KA units		RF
				b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	
1	50	F	10	60	15	28	10	II	II	35	37.5	85	60	30	155	33	130	8.5	10	+ve
2	20	F	4	180	20	15	3	I	I	57.5	75	45	18	22	29	25	30	4.2	6	+ve
3	23	M	5	120	10	9	--	I	I	110	130	62	25	20	27	23	30.5	5.5	6	-ve
4	22	F	3	30	--	2	--	I	I	135	140	80	40	28	50	21	45	3.3	4.2	+ve
5	50	F	3	60	--	8	--	I	I	107.5	125	65	26	21	25	19	23	4	4.7	-ve
6	45	F	6	60	10	30	5	I	I	25	60	66	22	28	31.5	26	30	5.1	6.2	-ve
7	40	F	4	120	15	18	2	II	II	22.5	60	60	33	25	32.5	28	40	6.8	9	-ve
8	36	F	1	60	--	11	1	II	I	95	125	60	20	25	30	29	33	4.1	4.5	+ve
9	50	F	1	90	15	15	4	II	I	45	80	100	33	24	35	29	37	5.5	7	+ve
10	28	F	3	180	15	15	4	II	I	45	72.5	82	28	26.2	30	25	34	6.1	7	+ve
11	54	F	2	180	30	18	6	III	II	22.5	37.5	60	29	21	29	23	30	4	4.6	+ve
12	38	F	4	30	--	12	2	II	I	80	102.5	83	26	24	60	30	80	6	9.3	+ve
13	53	M	5	30	--	10	1	I	I	95	120	65	22	24	55	30	92	5	5.7	+ve
14	29	F	4	120	10	8	--	I	I	130	160	50	22	26	47	29	50	3.5	5	-ve
15	42	F	7	120	15	17	3	II	II	70	90	58	10	23.1	33	28	41	4.2	6	+ve
16	48	F	2	30	10	12	3	I	I	50	67.5	58	27	22	25	21.2	23	8	8.5	+ve
17	45	F	4	120	60	23	9	III	III	22.5	32.5	110	40	25	70	24	50	4.8	6.2	+ve
18	49	M	10	120	20	9	2	I	I	115	170	51	13	22	29	20	28	3.3	4	+ve
19	18	F	4	180	20	17	5	II	II	110	115	70	22	26.4	39.4	30.3	49.5	7.5	8	+ve
20	48	F	4	30	--	15	3	II	I	80	102.5	65	20	25	40	28	50	6	7.2	+ve
21	50	F	8	60	--	15	--	I	I	107.5	135	80	28	23.1	29	18	30	7.1	8.2	+ve
22	41	F	10	60	--	14	--	I	I	77.5	125	60	15	21	29	19	45	9	4.5	+ve
23	43	F	1	60	--	21	3	II	II	22.5	62.5	60	22	31.1	32	30.3	33	9.6	9.8	+ve
24	22	F	5	120	--	20	--	II	I	40	87.5	40	21	20	27	28	40	4.2	4.3	-ve
25	32	F	4	180	30	12	5	II	II	42.5	60	65	40	25	65	28	50	5	5.1	+ve
26	35	F	2	60	--	9	1	I	I	135	140	75	15	10	23	22	29	7	10	+ve
27	42	F	3	90	10	20	4	II	II	105	110	95	20	22	30	25	40	6.2	12	+ve
28	48	F	2	120	30	19	5	II	II	65	77.5	90	35	18	19	24.5	24	4.2	4.2	+ve
29	47	F	3	180	30	22	5	I	I	107.5	125	85	15	23	29.5	17	35	5.6	5.7	-ve
30	45	F	2	120	20	11	4	I	I	100	122.5	60	12	21	40	25	46	7	9.8	-ve

* ESR : Erythrocyte sedimentation rate
* SGOT: Serum glutamic oxaloacetic transaminase
* SGPT : Serum glutami-

Table (6): Personal characteristics and some clinical and laboratory variables of RA patients (group B) before and after therapy.

Case No	Age (ys)	Sex	Duration of disease (ys)	Morning stiffness minutes		Articular index		Functional capacity		Mean grip strength mm/Hg		ESR 1st h. (mm)		SGOT N.(40u)		SGPT N.(45u)		AP N.3-13KA units		RF
				b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	
1	55	F	1	120	90	12	8	I	I	90	90	85	70	22	22	25	24	6.5	6	-ve
2	42	F	4	180	120	10	7	II	I	100	100	40	30	15	15.5	19.5	19.5	4.5	4.6	-ve
3	32	F	6	120	60	15	12	II	II	55	60	32	25	20	20	23	22	5.2	5	-ve
4	23	F	2	60	60	20	15	II	II	80	90	45	35	16	17	21	22	3.5	3.5	+ve
5	32	F	3	60	30	9	6	I	I	125	130	60	30	21.5	12.5	23	24	5	5	+ve
6	43	F	1	60	60	14	12	I	I	82.5	85	50	35	21	21	19	19	4	4.5	+ve
7	48	F	4	30	30	15	9	II	I	88	90	30	25	15	15	18	19	6	7.2	+ve
8	54	F	1	30	--	9	6	I	I	135	130	55	30	10	12	22.2	29	7	10	+ve
9	53	M	5	30	30	14	9	II	II	110	110	105	80	25	29.5	27	33	6	7.6	+ve
10	50	F	2	90	60	15	10	II	II	45	50	100	85	24.4	25	29	30	5.5	7	+ve
11	28	F	3	180	120	15	12	II	I	45	45	98	75	26.2	30	25	34	6.1	7	+ve
12	20	F	4	120	90	7	6	I	I	95	95	33	30	22	22	25	26	4.2	6	+ve
13	23	M	5	120	120	9	7	I	I	135	135	35	20	20	23	23	24	5.5	5.5	-ve
14	42	F	7	120	60	17	12	II	II	70	75	58	45	23.1	25	28	28	4.2	4.2	-ve
15	40	F	4	120	60	18	15	II	II	37.5	40	60	50	25	23.5	28	26	6.8	6.2	-ve

* ESR : Erythrocyte sedimentation rate
* SGPT: Serum glutamic pyruvic transaminase
* RF : Rheumatoid factor
* SGOT: Serum glutamic oxaloacetic transaminase
* AP : Alkaline phosphatase

Table (7): Statistical analysis of clinical and laboratory parameters in RA patients group (A) before and after MTX therapy.

Variable	Mean	SD	t	p
MS before after	95.7 12.8	50.1 13.8	10.5	*** <0.001
AI before after	15.2 3.0	6.1 2.7	14.1	*** <0.001
GS before after	75.5 98.1	36.8 36.3	-9.41	*** <0.001
ESR before After	69.1 27.0	15.6 15.6	10.5	*** <0.001
SGOT before after	23.4 41.3	3.9 26.9	-3.6	*** <0.001
SGPT before after	25.6 43.2	4.7 22.3	-4.2	*** <0.001
AP before after	5.7 6.8	1.8 2.2	-2	** <0.05

MS : Morning stiffness
AI : Articular index
GS : Grip strength
ESR: Erythrocyte sedimentation rate
SGOT: Serum glutamic oxaloacetic transaminase (N = 40 units)
SGPT: Serum glutamic pyruvic transaminase (N= 45 units)
AP : Alkaline phosphatase (N = 3-13 KA units)
SD : Standard deviation
t : Student's t-test value
p : Probability of mistake

** : significant
**** : highly significant

Table (8): Statistical analysis of clinical and laboratory parameters in control group (B) before and after drug therapy.

Variable	Mean	SD	t	p
MS before after	 96 51.7	 49.7 26.4	3.1	** < 0.05
AI before after	 13.3 3.5	 3.8 2.1	8.8	*** <0.001
GS before after	 87.7 97.0	 32.8 29.6	-.8	* > 0.05
ESR before After	 59.1 21.5	 26.0 7.6	6.7	** < 0.05
SGOT before after	 20.4 20.9	 4.5 5.6	-.61	* > 0.05
SGPT before after	 23.9 25.0	 3.6 5.5	-1.3	* > 0.05
AP before after	 5.3 5.8	 1.1 1.7	-0.5	* > 0.05

MS : Morning stiffness
AI : Articular index
GS : Grip strength
ESR: Erythrocyte sedimentation rate
SGOT: Serum glutamic oxaloacetic transaminase (N = 40 units)
SGPT: Serum glutamic pyruvic transaminase (N= 45 units)
AP : Alkaline phosphatase (N = 3-13 KA units)
SD : Standard deviation
t : Student's t-test value
p : Probability of mistake

* : insignificant
** : significant
**** : highly significant

Table (9): Comparison between clinical variables of group (A) and group (B) on initial assessment.

	Morning stiffness (minutes)	Articular index	Mean grip strength /mmHg
Group A	95.7 ± 50.1	15.2 ± 6.1	75.5 ± 36.8
Group B	96 ± 49.7	13.3 ± 3.8	87.7 ± 32.8
t	-0.019	+1.35	- 1.19
p	> 0.005	> 0.005	> 0.05
	Non-sign.	Non-sign.	Non significant

Table (10) Comparison between laboratory variables of group (A) and group (B) on initial assessment.

	ESR mm/1st h	SGOT (40 units)	SGPT (45 units	AP (3-13KA units
Group A	69.1 ± 15.6	23.4 ± 3.9	25.6± 4.5	5.7 ± 1.8
Group B	59.1 ± 26.0	20.4 ± 4.5	23.9± 3.6	5.3 ± 1.1
t	+1.38	+1.47	+1.41	+0.42
p	> 0.05	>0.05	>0.05	> 0.05
	Non-sign.	Non-sign.	Non-sign.	Non-sign.

Table (11): Comparison between clinical variables of group (A) and group (B) after three months.

	Morning stiffness in minutes	Articular index	Mean grip strength /mmHg
Group A	12.8 ± 13.8	3 ± 2.7	98.1 ± 36.3
Group B	66 ±	9.7 ± .8	87.7 ± 4.0
t	14.3	9.3	- 1.54
p	< 0.005	< 0.005	> 0.05
	Significant	Significant	Non significant

Table (12): Comparison between laboratory variables of group (A) and group (B) after three months.

	ESR	SGOT	SGPT	AP
Group A	27 ± 15.6	41.3 ± 26.9	43.2± 22.3	6.8 ± 2.2
Group B	45.7 ±	20.9 ± 5.6	25 ± 5.5	5.8 ± 1.7
t	6.7	+4	+4.5	+1.6
p	< 0.005	< 0.005	< 0.005	> 0.05
	Significant	Significant	Significant	Non-sign.

Table (13): Comparison beteween laboratory variables (blood count) of groups (A) and (B) after three months of therapy

	HB gm %	WBCs /mm^3	Platlets /mm^3
group(A)	11.04 ± 1.5	5910 ± 1220	187.000 ± 55.00
group(B)	11.2 ± 1.7	6506.7 ± 1350	194.333 ± 21.00
t	1.13 *	0.23 *	0.42 *
P	>0.05	>0.05	> 0.05

HB : haemoglobin
WBCs : white blood cells
t : Student's t-test value
p : probability of mistake
* : insignificant

Table (14) : Number of cases with MTX toxicity.

No.of cases	G.I symptoms	Skin	Elevated liver enzymes	Chest	CNS
13(43.3%)	2 (6.7%)	1(3.3%)	9 (30%)	1(3.3%) pneumonitis	---