did not find any relation between inflammatory activity and rheumatoid factor values.

The HLA-B27 associated arthropathies are typically seronegative disorders. We, however, carefully excluded patients with ankylosing spondylitis, reactive arthritis, and psoriatic arthritis, so these arthropathies could not have influenced the results.

The biological role of rheumatoid factors is not known. Although seropositivity at the onset of rheumatoid arthritis suggests a poorer prognosis, several studies have failed to detect a relation between IgM rheumatoid factor titres and disease activity.³⁻⁵ Finding an association of amyloid disease with seronegativity in adult rheumatoid arthritis may be interpreted in favour of some protective role of rheumatoid factors, at least with respect to the development of amyloid; or, more likely, seronegativity and the development of amyloid may be related to similar genetic factors.

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Comparison of three physiotherapy regimens for hands with rheumatoid arthritis

There have been few controlled comparisons of the various physiotherapy techniques for rheumatoid arthritis in the hands. A regimen of standard exercises supplemented by wax is available to most patients and general practitioners. We have compared this simple regimen with two, more elaborate forms of physiotherapy available in hospital departments.

Mean results for each measurement for each treatment

Measurement	Treatment group	Week			
		0	1	2	3
Grip strength (mm Hg)	1	91	99*	111**	111**
	2	66	81**	88**	89**
	3	84	92*	95**	99**
Summed circumference of proximal interphalangeal joints (mm)	1	321	314**	310**	310**
	2	314	308	305**	304*
	3	343	335**	331**	329**
Hand articular index	1	16	11**	8**	6**
	2	13	10*	7**	5**
	3	16	12**	10**	10**
Pain score by visual analogue scale (mm)	1	67	49	39	30*
	2	62	47	30*	29*
	3	71	57*	42**	37**
Range of movement (mm)	1	57	—	—	90**
	2	54	—	—	69*
	3	66	—	—	77
Timed task (s)	1	28	23	20*	18*
	2	30	29	27	25*
	3	25	21**	20**	20*
Activities score	1	6.6	7.8	9.4**	10.2**
	2	6.3	7.7	9.1*	10.0*
	3	7.7	8.2	9.4*	8.7

Compared with baseline: *p<0.05; **p<0.01 (Wilcoxon's rank sum test).

Patients, methods, and results

Thirty inpatients with classical or definite rheumatoid arthritis (American Rheumatism Association criteria) affecting the hands were recruited. All had pain and swelling of the hands and limitation of movement. Patients remained in hospital throughout the three week study period and existing drug regimens and other procedures were continued unaltered. Intra-articular steroid injections were not allowed.

Patients were allocated at random to three groups. Group 1 received wax treatment followed by standard exercises for five days a week. The wax procedure entailed dipping the hands into melted wax 10 times, then wrapping them in greaseproof paper with a blanket which was left on for 20 minutes. Group 2 received ultrasound (3 MHz at 250 W/cm² for six minutes per treatment) followed by standard exercises. Group 3 received ultrasound and faradic hand baths (15 minutes for each hand) followed by standard exercises.

Patients were assessed blindly by an independent observer before treatment and at weeks 1, 2, and 3. Seven assessments were performed at each visit (grip strength, interphalangeal joint circumference, visual analogue scale for pain, articular index confined to the hand, range of movement in the fingers using a method analogous to Schoeber's test, time to dial a six figure telephone number, ability to perform daily activities).

The table gives the results. The groups were well matched initially and all showed significant improvement by week 3 (Wilcoxon's rank sum test: 0.01 < p < 0.05). About half the patients showed significant improvement after only one week of treatment. Statistical comparison between groups was by Kruskal-Wallis one way analysis of variance by ranks. There was no significant difference among treatments at any time for six of the seven assessments, but for activity score there was less improvement in group 3 (p < 0.02). We found no evidence of a difference in performance between dominant and non-dominant hands.

Comment

Although all three physiotherapy methods produced significant improvement, six of the seven clinical assessments failed to disclose a significant difference between methods. We considered that the lack of improvement in activity score observed with faradic hand baths was not clinically important. Ultrasound or faradic hand baths appear to confer no advantage over the simpler wax treatment followed by standard exercises. This has important economic implications: ultrasound and faradic hand baths require referral to a hospital physiotherapy department. Exercises may be supervised at home and wax may be prescribed by general practitioners for patients who can use it safely, and these simple measures are likely to be just as effective in the treatment of rheumatoid arthritis of the hands.

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