FLUORIDATION AND THE RHEUMATIC DISEASES A COMPARISON OF RHEUMATISM IN WATFORD AND LEIGH

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Although the importance of an adequate fluoride intake has been known for some time and the value of fluoride in the water supplies as a means of preventing dental decay has been established, it is necessary to ensure beyond all doubt that the procedure has no harmful effects. Kemp, Murray and Wilson (1942), in a radiological survey of a small group of persons from areas in which the water supply contained 0.3-5.0 parts of fluoride per million, described irregular ossification of the epiphyseal nuclei and also of end-plates of the vertebral bodies; this was associated with the adolescent type of kyphosis in children and young adults. The suggestion was made that these findings might be associated with fluoride in the water supply combined with defective nutrition, and this led one of the authors (F. H. Kemp) to take part in another survey (Eley, Kemp, Kerley, and Berry, 1957), in which 328 boys aged 11-14 from high fluoride areas (1.5-5.8 parts per million) and a control group from low fluoride areas (0.1 parts or less parts per million) were radiographed to ascertain the prevalence of Scheuermann's disease or other spinal defects. No indication that fluoride was associated with such conditions emerged. Nor were Steinberg, Gardner, Smith, and Hodge (1957) able to substantiate any relationship between musculo-skeletal disease and fluoridation of the public water supply.

In view of the report of Kemp and others (1942) and the desire to exclude the possibility that fluoridation affected the prevalence of rheumatic complaints, the Ministry of Health requested that a survey of rheumatic conditions be made in the Borough of Watford, Hertfordshire, where the water supply had been fluoridated at 1.0 part per million since May, 1956.

An area sample of some 500 persons aged 15 and over was decided upon, for comparison with a population sample in Leigh, Lancashire, examined

by the Field Unit in 1954-59. Both Watford and Leigh are manufacturing towns, of some 76 thousand and 46 thousand inhabitants respectively, and both are situated on the outskirts, though separated from, large conurbations, Watford lying 17 miles to the North-West of London, and Leigh 16 miles to the North-West of Manchester. The water supply in Leigh contains less than 0.2 parts per million of fluoride, whereas Watford water now contains 1.0 part per million.

Method

Four streets were chosen at random in the Borough of Watford. These included a residential street, two housing estates, one built between the wars and the other since 1945, and finally a street near the centre of the town built before 1914. A list of inhabitants aged 15 and over was obtained from the local directory and checked by private census. It was found that 496 persons of appropriate age resided in these four streets. Following initial publicity in the press and on the radio, contact was made with these 496 persons by home visitors who arranged appointments for x ray in the mobile unit placed, for this purpose, in the Town Hall Car Park. A detailed history was taken of all symptoms, present and past, and a clinical examination of the musculo-skeletal system was carried out. Routine x rays were taken of the hands, feet, and cervical spine; in addition, males had x rays of the pelvis with suitable gonadal screening. In both sexes those aged 35 and over had x rays of the lumbar spine and knees. The pelvis was x rayed in females above the age of 45. A sample of blood was taken for estimation of the sheep-cell agglutination and latex-fixation titres.

Those who were unable to attend for x ray were examined at home. In these persons the lumbar spine and pelvic x rays had to be omitted because of the limitations of the portable x ray equipment.

The Leigh survey was made on the same lines, except that a 1 in 30 random household sample of the population was taken and x rays of the pelvis were included only in those aged 55 and over. For full details of the method of sampling in Leigh, see Lawrence and Bennett (1960).

In both the Watford and Leigh surveys, three clinicians took part, one observer being present for both surveys. All the Watford *x* rays, together with a sample of those from Leigh, were mixed and read without knowledge of their source by one observer (J.S.L.); a sample of the Watford *x* rays was also read by a second observer (B.M.A.).

The sera were examined by the sheep-cell agglutination test by Dr. J. Ball of the Rheumatism Research Centre, Manchester, and the latex-fixation test was carried out by Mr. A. Reading of the Canadian Red Cross Memorial Hospital, Taplow.

Completion Rate.—Of the 496 persons in the Watford survey, 356 had a clinical examination, *x* rays, and a blood test, 57 had a clinical examination and *x* rays only, and eight a clinical examination and blood test only. The completion rate was thus 85 per cent. Of the 75 who refused to co-operate or were not available, a number were examined clinically but have not been used in the analyses which follow since no objective data are available. Similarly, in Leigh, the completion-rate for those who had either an *x* ray or a blood test was 86 per cent. (Table I). The main difference lies in the number, totalling 54 in Watford, who had *x* rays but refused to give blood. The age distribution of the Watford respondents differed slightly from that in Leigh (Table II); a correction for age distribution has therefore been made in the Tables which follow, the expected rate for the Watford sample being assessed from the Leigh sample by adjustment to the Watford age distribution.

TABLE II

AGE AND SEX DISTRIBUTION OF RESPONDENTS IN WATFORD AND LEIGH SAMPLES

Age Group (yrs)	Males		Females	
	Watford	Leigh	Watford	Leigh
15-24	39	105	35	106
25-34	40	119	46	106
35-44	26	107	30	124
45-54	43	151	41	152
55-64	32	93	32	112
65+	22	78	35	89
Total	202	653	219	689

TABLE I

COMPLETION RATE IN WATFORD AND LEIGH SURVEYS

Survey	Total in Sample	Refused to Co-operate or Not Available	<i>x</i> ray and Blood Test	<i>x</i> ray Only	Blood Test Only	<i>x</i> ray and/or Blood Test	Completion Rate (per cent.)
Watford	496	75	356	57	8	421	85
Leigh	1,565	222	1,239	72	31	1,342	86

Results

Total Rheumatic Complaints

Of the Watford males, 99 stated that at some time they had had rheumatic symptoms (Table III, opposite).

The expected number, as determined from the Leigh sample was 125, a significant difference ($P \leq 0.04$). Of the Watford females, 134 had at some time had rheumatic complaints compared with an expected number of 141. The diminished prevalence was not found in the older age group, being present only in those under the age of 55. A history of loss of work due to rheumatic complaints was given by 25 males and 31 females compared with an expected 56 males and 54 females in Leigh ($P < 0.01$). The difference was present in all age groups in both males and females. In Watford those incapacitated for 3 months or more were eight males and eight females, compared with an expected 22 and sixteen. Rheumatic complaints at the time of interview were present in 33 males and 56 females, again below the expected rate. Only two males and one female were actually off work because of rheumatic trouble at the time of the survey; all three had been off work for at least 3 months, one man with rheumatoid arthritis and the other with lumbar disk prolapse and spinal osteoporosis, and the woman with disk degeneration possibly associated with rheumatoid arthritis of the spine.

Prevalence of Rheumatoid Arthritis

Rheumatoid arthritis was assessed in the Watford population by three methods:

- (1) A grading from 0 to 4 for rheumatoid arthritis was given immediately after the clinical examination.
- (2) A grading from 0 to 4 for radiological evidence of erosive arthritis was given on all *x* rays regardless of the clinical grading.
- (3) The A.R.A. criteria (Ropes, Bennett, Cobb, Jacox and Jessar, 1958) as modified in Rome for population studies (Kellgren, Jeffrey, and Ball, 1963) were assessed from the clinical and radiological findings and the results of serum tests.

TABLE III

Sex	Age Group (yrs)	Total Examined	Since Birth						At Time of Interview					
			Total with Complaints		Pain Off work 1 week or more		Off work 3 months or more		Total with Complaints		Pain Off work 1 week or more		Off work 3 months or more	
			Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected
Male	15-24	39	9	11.3	1	1.95	1	0.78	2	4.7	1	0	1	0
	25-34	40	16	23.7	4	5.6	1	1.2	3	9.2	0	0	0	0
	35-44	26	9	16.1	0	5.7	0	1.8	1	6.5	0	0	0	0
	45-54	43	23	31.0	10	20.3	3	6.9	10	15.5	0	1.29	0	0.86
	55-64	32	25	24.3	5	15.0	2	7.4	11	15.4	1	0.35	1	0.35
	65+	22	17	16.3	5	7.1	1	3.38	6	6.6	0	0.29	0	0.29
	Total	202	99	124.7	25	55.6	8	21.5	33	47.9	2	1.9	2	1.5
Female	15-24	35	10	8.1	1	2.1	0	0.31	3	3.9	0	0	0	0
	25-34	46	16	26.2	2	6.45	1	0.46	5	7.8	0	0	0	0
	35-44	30	16	19.8	3	6.9	1	1.8	6	12.3	0	0.3	0	0
	45-54	41	33	32.8	8	14.6	3	2.46	13	19.3	1	0.41	1	0.27
	55-64	32	29	28.0	9	14.4	2	5.1	14	20.5	0	0.96	0	0.58
	65+	35	30	26.2	8	9.5	1	5.9	15	17.9	0	1.5	0	1.16
	Total	219	134	141.1	31	53.9	8	15.9	56	81.7	1	3.2	1	2.0

definite disease was present in three males and nine females (Table V). By these criteria also there was thus rather less rheumatoid arthritis than in Leigh, since five males and thirteen females would be expected to have probable or definite disease in a population of this age distribution.

Since clinical assessment including the use of the A.R.A. criteria is subject to observer difference, it is

TABLE IV

Age Group (yrs)	Males							Females								
	Total Examined	Grade					Grade 2-4		Total Examined	Grade					Grade 2-4	
		0	1	2	3	4	Actual	Expected*		0	1	2	3	4	Actual	Expected*
15-24	39	38	0	0	1	0	1	0	35	33	2	0	0	0	0	0
25-34	40	40	0	0	0	0	0	0.68	46	45	1	0	0	0	0	1.29
35-44	26	25	1	0	0	0	0	0.49	30	25	4	1	0	0	1	1.04
45-54	43	38	3	2	0	0	2	1.42	41	35	5	1	0	0	1	1.08
55-64	32	24	8	0	0	0	0	1.02	32	22	8	2	0	0	2	4.26
65+	22	15	5	2	0	0	2	0.56	34	23	9	1	1	0	2	3.76
Total	202	180	17	4	1	0	5	4.17	218	183	29	5	1	0	6	12.4

* From Leigh sample.

TABLE V

Age Group (yrs)	Males						Females					
	Total Examined	None 0 1 2	Probable 3 4	Definite 5	Probable + Definite		Total Examined	None 0 1 2	Probable 3 4	Definite 5	Probable + Definite	
					Actual	Expected					Actual	Expected
15-24	39	36 2 0	1 0	0	1	0.23	35	33 2 0	0 0	0	0	0
25-34	39	38 1 0	0 0	0	0	0.39	46	42 3 1	0 0	0	0	0
35-44	25	21 3 1	0 0	0	0	0.25	30	24 4 1	1 0	0	1	0.60
45-54	42	28 12 2	0 0	0	0	1.26	41	30 5 5	0 1	0	1	1.64
55-64	32	20 11 0	1 0	0	1	1.60	32	15 9 4	2 1	1	4	4.80
65+	22	13 6 2	0 1	0	1	0.88	34	14 12 5	0 1	2	3	5.45
Total	199	156 35 5	2 1	0	3	4.6	218	158 35 16	3 3	3	9	12.5

TABLE VIII
RELATIONSHIP OF CLINICAL TO RADIOLOGICAL EVIDENCE OF R.A. (GRADES 2 AND 3)
IN WATFORD SAMPLE

Evidence of R.A.	Grade of Rheumatoid Arthritis			
	2		3	
	Total	S.C.A.T. Positive	Total	S.C.A.T. Positive
Clinical Only	7	0	1	0
Radiological Only	42	1	1	NS
Clinical and Radiological	2	1	1	0

Fig.

metacarpo-phalangeal joint and slight subluxation of the twelfth dorsal and first lumbar vertebrae, and was not regarded as having definite rheumatoid arthritis from the *x* rays. A third person had Grade 3 arthritis of the cervical spine on *x* ray and a history of pain in the hands, but was not thought to have clinical rheumatoid arthritis; she refused a blood test. Of the nine persons with Grade 2 clinical disease, two had radiological change, one with a positive S.C.A.T.; in the other seven the serum tests were negative. There were 42 with minimal radiological erosions but no clinical evidence, one with a positive S.C.A.T.; most of these had erosive arthritis in the hands or feet, or in the cervical spine.

Other Rheumatic Disorders

At the initial clinical examination only one male and none of the females in Watford was given a diagnosis of spondylitis. By the Rome criteria (Kellgren and others, 1963), the one male had definite spondylitis. The prevalence was thus 5 per 1,000 in males which may be compared with the figure of 4 per 1,000 in the males of Leigh and

Wensleydale. Two males were considered to be suffering from gout. This is the expected prevalence. None had definite gout by the Rome criteria, each having only one positive criterion.

Prevalence of Osteo-arthritis

Osteo-arthritis was graded 0 to 4 for each group of joints, the grade of the worst affected joint being recorded. All the D.I.P. joints were considered to be in one group as were all the P.I.P. joints and so on. In this way, the joints *x* rayed were divided into fourteen groups. The number of joint groups in which there was at least a Grade 2 osteo-arthritis is shown for the Watford sample and for Leigh in Table IX (overleaf).

Of the Watford males, twelve (6 per cent.) had osteo-arthritis in five or more groups of joints compared with 7 per cent. in Leigh. Of the Watford females, 21 (10 per cent.) had five or more groups of joints affected compared with 14 per cent. in Leigh, an insignificant difference. Nor was there any significant difference in the more severe grades in males, but females had less frequent multiple osteo-arthritis Grade 3 to 4 affecting five or more joints in Watford than in Leigh; the difference was not significant (Table X, overleaf).

Prevalence of Disk Degeneration

Cervical disk degeneration Grade 3 to 4 was present in 37 of the Watford males, whereas 42 would have been expected (Table XI, overleaf); there was thus no significant difference between the two populations in males. The Watford females had more disk degeneration than those in Leigh, 37 having Grade 3 to 4 changes, compared with 25 expected. This was found chiefly in the older age groups, from 55 years of age onwards, but was not significant at the 5 per cent. level.

Lumbar disk degeneration was present in almost identical proportions in Leigh and Watford, sixteen males (19 per cent.) and thirteen females (15 per cent.) having moderate or severe change, compared with an expected fourteen and eleven respectively (Table XI).

TABLE IX
NUMBER OF JOINT GROUPS WITH OSTEO-ARTHRITIS GRADE 2-4, BY AGE AND SEX

Survey	Age Group (yrs)	Males							Females						
		Total	0	1	2	3	4	5	6	7	8	9	10	+	5+ (per cent.)
Watford	15-24	39	37	2	0	0	0								
	25-34	38	31	5	2	0	0								
	35-44	25	16	6	2	1	0								
	45-54	40	18	11	7	2	2								
Leigh	25-34	39	34	5	0	0	0								
	35-44	25	28	10	1	0	0								
	45-54	41	12	11	9	4	3								
	55-64	30	1	5	8	5	4								
Total	65+	22	3	1	2	6	4								
Total		195	109	32	20	12	11	4	3	1	3	1	0		6
Total		196	92	41	23	15	11	5	4	3	1	1	0		7
Total		213													10
Total		214	62	26	58	23	13	12	5	2	8	0	2		14

TABLE X
NUMBER OF JOINT GROUPS WITH OSTEO-ARTHRITIS GRADE 3-4 IN PERSONS AGED 55 AND OVER, BY SEX

Survey	Age Group (yrs)	Males							Females						
		Total	0	1	2	3	4	5	6	7	+	Total	0	1	2
Watford	55-64	31	21	6	4	0	0	0	0	0		32	20	8	3
	65+	22	8	4	4	1	4	2	0	0		33	9	15	3
	Total	53	29	10	8	1	4	2	0	0		65	29	23	6
Leigh	55-64	30	17	8	3	1	1	0	0	0		32	15	11	5
	65+	22	11	8	2	0	1	0	0	0		33	11	6	4
	Total	52	28	16	5	1	2	0	0	0		65	26	17	9

TABLE XI
RADIOLOGICAL EVIDENCE OF DISK DEGENERATION IN WATFORD
COMPARED WITH THAT EXPECTED FROM LEIGH SURVEY BY SITE, AGE, AND SEX

Site of Disk Degeneration	Sex	Age Group (yrs)	Total x rayed	Grade of Disk Degeneration					
				0	1	2	3	4	5
Cervical	Male	15-24	39	38	0	1	0	0	
		25-34	38	33	2	3	0	0	
		35-44	25	20	1	4	0	0	
		45-54	41	18	4	10	9	0	
		55-64	31	9	2	7	12	1	
	Female	65+	22	0	2	5	15	0	
		Total	196	118	11	30	36	1	
Lumbar	Male	35-44	15	6	3	6	0	0	
		45-54	28	10	2	14	2	0	
		55-64	25	2	2	13	6	2	
		65+	15	2	0	7	5	1	
		Total	83	20	7	40	13	3	
	Female	35-44	21	11	2	6	2	0	
		45-54	29	13	2	10	4	0	
		55-64	23	9	0	10	4	0	
		65+	15	3	0	9	3	0	
		Total	88	36	4	35	13	0	

Prevalence of Osteoporosis

Osteoporosis was graded 0 to 4 in all the Watford and Leigh *x* rays. Only in the hand *x* rays was a standard bone included, so that the assessment was probably more reliable in the hands than elsewhere. Two Watford males (1 per cent.) had Grade 2 to 4 osteoporosis of the hands, whereas 2.3 would have been expected (Table XII). Five Watford females (2 per cent.) had Grade 2 to 4 change compared with an expected 22; a highly significant difference ($P < 0.01$). Similarly, osteoporosis in the cervical spine showed little difference between Watford and Leigh in the males but was significantly less frequent in the Watford females, of whom only six (3 per cent.) had Grade 2 to 4 osteoporosis compared with an expected eighteen ($P \approx 0.01$). Lumbar osteoporo-

sis showed the same prevalence in the two areas but in view of the difficulty of assessing osteoporosis in the lumbar spine from radiographs this result must be accepted with caution.

Effect of Renal Disease

As a special group, three Watford residents with known renal disease were also studied:

(1) A man aged 24 had been diagnosed as having idiopathic pulmonary haemosiderosis with renal involvement. Renal biopsy showed that two-thirds of the renal glomeruli were abnormal, some showing basement membrane thickening, others partial hyalinization. His urea clearance was between 129.9 and 134.4 ml./min. and blood urea 29 to 36 mg./100 ml. Apart from back pain he had no musculoskeletal symptoms or signs, and the

TABLE XII

OSTEOPOROSIS IN WATFORD COMPARED WITH EXPECTED PREVALENCE FROM LEIGH RANDOM SAMPLE, BY SITE, AGE AND SEX

Site of Osteoporosis	Sex	Age Group (yrs)	Total x rayed	Grade of Osteoporosis						
				0	1	2	3	4	2-4	
									Actual	Expected
Hands	Male	15-24	39	39	0	0	0	0	0	0
		25-34	38	38	0	0	0	0	0	0
		35-44	25	24	1	0	0	0	0	0
		45-54	40	40	0	0	0	0	0	0.32
		55-64	31	30	0	0	1	0	0	0.96
		65+	22	21	0	1	0	0	0	0.99
	Total	195	184	1	1	1	0	2	2.3	
	Female	15-24	35	35	0	0	0	0	0	0
		25-34	44	43	1	0	0	0	0	0
		35-44	30	30	0	0	0	0	0	0
45-54		40	40	0	0	0	0	0	0.88	
55-64		32	31	1	0	0	0	0	8.3	
65+		33	26	2	5	0	0	0	12.9	
Total	214	205	4	5	0	0	5	22.1		
Cervical Spine	Male	15-24	39	39	0	0	0	0	0	0
		25-34	38	34	4	0	0	0	0	0
		35-44	25	25	0	0	0	0	0	0.25
		45-54	41	36	3	2	0	0	0	0.66
		55-64	31	29	0	1	1	0	0	1.0
		65+	22	19	2	1	0	0	0	0.51
	Total	196	182	9	4	1	0	5	2.42	
	Female	15-24	34	34	0	0	0	0	0	0
		25-34	44	44	0	0	0	0	0	0
		35-44	30	28	1	1	0	0	0	0
45-54		38	36	1	1	0	0	0	1.68	
55-64		31	29	1	1	0	0	0	5.9	
65+		32	22	7	3	0	0	0	10.7	
Total	209	193	10	6	0	0	6	18.28		
Lumbar Spine	Male	35-44	15	15	0	0	0	0	0	0.33
		45-54	28	24	2	2	0	0	0	0.92
		55-64	25	19	4	1	1	0	0	0.43
		65+	15	11	3	1	0	0	0	3.2
	Total	83	69	9	4	1	0	5	4.88	
	Female	35-44	21	20	1	0	0	0	0	0
45-54		29	21	5	2	1	0	0	0.73	
55-64		23	15	4	2	2	0	0	4.1	
65+		15	5	5	4	1	0	0	6.3	
Total	88	61	15	8	4	0	12	11.13		

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x rays showed no abnormality in the spine, hands, or pelvis.

(2) A man aged 66 with diabetes and secondary glomerulo-sclerosis had proteinuria and a blood urea of 80 mg./100 ml. He complained of pain in the shoulders which were limited in all movements, as were the hips. The *x* rays showed generalized osteoarthritis of minimal severity but no sclerotic changes.

(3) A woman aged 69, who had had her left kidney removed 2 years previously because of hydronephrosis, had hypertension and pitting oedema of the ankles. Her blood urea was 50 mg./100 ml. She complained of back pain and had degenerative changes in the 1st and 5th lumbar disks but no sclerosis or new bone formation.

Discussion

It is clear from the findings in this survey that the prevalence of rheumatic disease was no greater in Watford, where 1 part of fluoride per million had been added to the water supply for the previous 5 years, than in Leigh, where the water contains negligible quantities of fluoride.

The lower frequency of rheumatic complaints in Watford cannot be explained by differences in memory since the prevalence was less at the time of the survey as well as in the past. The difference in incapacity in the two populations is also against a memory difference. Climatic influences may have played a part. The average rainfall in Watford is 24 in. per annum compared with 34 in. in Leigh, and the hours of sunshine 1,460 per annum in Watford compared with 1,070 in Leigh. It would be expected, however, that climate would influence mainly those with the degenerative forms of rheumatism, since complaints in these forms depend to a great extent on the pain threshold (Lawrence, 1955). Observer difference may have played a part. Only 70 males and 77 females were questioned by the observer who took part in the Leigh survey. In Watford a history of rheumatic complaints was elicited in 39 men (56 per cent.) and 50 women (65 per cent.) seen by this observer. This is rather more than in the sample as a whole but slightly less than the expected 45 males and 53 females. This may well have been due to a change of grading by this observer. The only objective evidence of diminished rheumatic disease was that related to osteoporosis and it would seem unlikely that this is responsible for the difference in rheumatic complaints in Leigh and Watford, since osteoporosis occurs only in the older age groups and mainly in females, and rheumatic complaints were diminished in both sexes and in females mainly in the younger age group.

The reason for the low prevalence of osteoporosis in the Watford population cannot be determined on

the present evidence; it would seem unlikely that the addition of fluoride to the water supply is responsible, although Leone, Stevenson, Besse, Hawes, and Dawber (1960) found a higher prevalence of severe osteoporosis in Birmingham, where the fluoride content of the water was 0.04 p.p.m., than in the surveys in the towns of Bartlett and Cameron, where the content was 8.0 and 0.4 p.p.m. respectively. Moreover, Posner (1965) found increased crystalline size in bones of persons from high fluoride areas. The administration of fluoride to osteoporotic patients has not, however, been found to affect the calcium balance (Rose, 1965).

The low sheep cell agglutination titres in the Watford sample calls for some comment. In several surveys of populations in Northern Europe, de Graaff, Laine, and Lawrence (1963) found fewer positive sheep cell agglutination titres in the rural than in the urban populations. Watford is larger than Leigh but specializes in lighter industry and has less atmospheric pollution. A possible relationship of the sheep cell factor to atmospheric pollution is at present under review.

Summary

(1) A population sample in the town of Watford, Hertfordshire, has been examined clinically, radiologically, and serologically to determine the prevalence of chronic rheumatic diseases. A comparison has been made with a population sample in Leigh, Lancashire. The water supply in Watford has been fluoridated during the previous 5 years, whereas in Leigh the water contained only negligible amounts of fluoride.

(2) There was no increased prevalence of rheumatoid arthritis, osteo-arthritis, spondylitis, gout, or disk degeneration, and indeed, rheumatic complaints as a whole and incapacity due to rheumatism were significantly less in Watford than in Leigh.

(3) The prevalence of positive sheep cell agglutination titres and latex-fixation titres in Watford was significantly lower than expected.

(4) There was a diminished prevalence of osteoporosis as judged from hand and cervical radiographs in the Watford females compared with those in Leigh, that in males being similar in each area.

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Fluoruration des eaux de boisson et les maladies rhumatismales.—Etude comparée de deux villes anglaises, Watford et Leigh

RÉSUMÉ

(1) On examina du point de vue clinique, radiologique et sérologique un échantillon de la population de la ville de Watford, en Hertfordshire, pour déterminer la fréquence des maladies rhumatismales chroniques. On compara les résultats avec ceux obtenus de la même manière à Leigh, Lancashire. Les eaux de boisson de

Watford sont fluorées depuis cinq ans, tandis que l'eau potable à Leigh ne contient que des quantités négligeables de fluor.

(2) On ne trouva pas de fréquence augmentée d'arthrite rhumatismale, d'ostéoartrite, de spondylarthrite, de dégénérescence du disque et, au fait, de manifestations rhumatismales quelconques. L'incapacité due au rhumatisme fut significativement moindre à Watford qu'à Leigh.

(3) Les réactions de Waaler-Rose et de fixation au latex positives furent significativement en dessous de l'espérance mathématique.

(4) La fréquence d'ostéoporose, estimée d'après les radiographies des mains et des vertèbres cervicales, fut moindre chez les femmes de Watford que chez celles de Leigh. Pour les hommes, cette fréquence fut la même dans les deux villes.

Fluoración del agua potable y las enfermedades reumáticas. Una comparación de dos ciudades inglesas, Watford y Leigh

SUMARIO

(1) Se examinó clínica, radiológica y serológicamente una muestra de la población de la ciudad de Watford, Hertfordshire, para determinar la frecuencia de las enfermedades reumáticas crónicas. Se compararon los resultados con los obtenidos de la misma manera en la ciudad de Leigh, Lancashire. En Watford se añade fluor al agua potable desde cinco años, mientras que el agua potable en Leigh contiene sólo cantidades desdenables de este elemento.

(2) No se encontró frecuencia aumentada de artritis reumatoide, osteoartritis, espondilitis, degeneración discal o otras cualesquiera manifestaciones reumáticas. La incapacidad debida al reumatismo fué significativamente menor en Watford que en Leigh.

(3) Las reacciones de Waaler-Rose y de fijación al latex positivas fueron significativamente debajo de las previstas estadísticamente.

(4) La frecuencia de la osteoporosis, según radiografías de manos y de columnas cervicales, fué menor en mujeres de Watford que en las de Leigh, pero no se encontró tal diferencia entre los hombres de estas ciudades.