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Infectious Mononucleosis

2. Relation of Bed Rest and Activity to Prognosis

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In this study of 131 patients with infectious mononucleosis, those whose activity was unrestricted improved more rapidly than those kept at strict bed rest during the acute stage of the disease.

Only in unusually severe cases of infectious mononucleosis or in the presence of severe complications is strict bed rest or prolonged limitation of activity justified.

WILLARD DALRYMPLE

THE increasing profusion of literature on infectious mononucleosis emphasizes the complications of this ordinarily benign disease. As a result, many physicians may insist on prolonged bed rest for their patients. This paper reports an investigation of the actual prognosis for 131 patients with infectious mononucleosis and of the virtues of bed rest as compared with those of activity in managing this disease.

Methods

From a total population of about 9000 students, all those with infectious mononucleosis were observed at a special clinic established at the University Health Services at Harvard University. Those in whom symptoms or objective findings demanded closer supervision entered Stillman Infirmary at the University. To this latter group were added patients admitted from another clinic serving approximately 1500 students.

When patients entered the infirmary, they were assigned alternately to the Stillman A or Stillman B group. Activity was unrestricted for the Stillman A group (47 patients) while they were in the infirmary, and they were discharged as soon as subjective symptoms permitted. The extreme case in this group was that of a young man, still moderately feverish, who reported one morning on rounds that he

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Part 1 appeared in the March issue.

TABLE 1

SYMPTOMS IN 131 PATIENTS WITH INFECTIOUS MONONUCLEOSIS

SYMPTOMS	STUDY GROUPS					
	Stillman A (unrestricted activity) 47 patients*		*Stillman B* (bed rest) 36 patients*		*Outpatients 48 patients*	
	Number	Per cent	Number	Per cent	Number	Per cent
Sore throat	41	88	31	86	39	81
Exudate in throat	22	47	13	36	4	8
Cervical adenopathy	45	96	35	97	48	100
Other adenopathy	28	60	16	44	32	67
Splenomegaly	32	68	28	78	31	65
Maximal lymphocytosis (per cent)						
61 to 70	1	2	5	14	9	19
71 to 80	16	34	5	14	16	33
Over 80	26	55	23	64	17	35
Maximal heterophilic agglutination (titer)						
Under 1:40	3	6	3	8	6	13
1:40 to 1:80	5	11	3	8	6	13
1:160 to 1:640	21	45	17	47	26	54
1:1,280 or over	18	38	12	33	10	21
Fever (days present) over 99° F.						
None	1	2	0	0	18	38
1 to 2	15	32	6	17	13	27
3 to 6	11	23	8	22	9	19
Over 6	20	43	20	56	7	15
Over 102° F.	12	26	12	33	3	6

*Patients confined to infirmary.

had just done 50 deep knee bends and felt fine. To this group were added a small number of patients who proved to have infectious mononucleosis some days after admission to the infirmary and whose activity had been unrestricted.

The Stillman B group (36 patients) remained at bed rest, except for bathroom privileges, until they were afebrile and the percentage of lymphocytes on differential count had decreased substantially.

The ambulatory group comprised 48 patients who were not ill enough to seek or require admission to the infirmary. The three groups are compared in table 1.

While the patients were confined to the infirmary, the following laboratory studies were made twice weekly: heterophilic agglutination, urinalysis, white blood cell and differential blood cell counts, and determination of the sedimentation rate. Guinea pig kidney absorption tests were not done.

While ambulatory, patients reported to the clinic at about weekly intervals until they were asymptomatic. They were urged to return if any health problems occurred. Information obtained during the occasional return visits and random contacts indicated that they followed this advice.

In the tables and text, fever refers to tem-

TABLE 2

DURATION OF SUBJECTIVE SYMPTOMS IN 131 PATIENTS WITH INFECTIOUS MONONUCLEOSIS

DURATION OF SYMPTOMS (DAYS)	STILLMAN A* (UNRESTRICTED ACTIVITY) 47 PATIENTS	STILLMAN B* (BED REST) 36 PATIENTS	OUTPATIENTS 48 PATIENTS	TOTAL PATIENTS
Under 14	13	6	10	29
14 to 20	11	7	10	28
21 to 28	14	7	11	32
29 to 41	6	9	11	26
Over 41	2	7	5	14
Uncertain	1	0	1	2

*Patients confined to infirmary.

perature over 99° F., taken orally. Duration of symptoms refers to the patients' own reports. In most cases, fatigue or lack of energy was the symptom of longest duration; the time of cessation of this symptom was determined as accurately as possible by close questioning of the patients. A very few cases include data obtained from private physicians who attended the patients during part of their illnesses.

Results

In this series of 131 patients, 12 of them female, the data obtained were sufficiently complete to include in one or more parts of these analyses. Of these patients, 104 had heterophilic agglutinations of 1:160 or more. Twelve had negative agglutinations or agglutinations which were positive only to a dilution of less than 1:40. These 12 did not appear to vary in any significant characteristic from the total group, and all had lymphocytosis with atypical lymphocytes in the peripheral blood. Heterophilic agglutination tests were done on all but one patient; he had a clinical and laboratory course otherwise typical of infectious mononucleosis.

Tables 2 and 3 demonstrate the first of the two most important findings in this study. As suggested but seldom documented in the literature,[1,2] patients with infectious mononucleosis usually have short illnesses. Only 10 per cent of the students felt tired (or had any other symptoms) for longer than six weeks after the onset of symptoms. Of the 131 sub-

TABLE 3

DURATION OF SUBJECTIVE SYMPTOMS OTHER THAN NONINCAPACITATING FATIGUE IN 131 PATIENTS WITH INFECTIOUS MONONUCLEOSIS

DURATION OF SYMPTOMS (DAYS)	STILLMAN A* (UNRESTRICTED ACTIVITY) 47 PATIENTS	STILLMAN B* (BED REST) 36 PATIENTS	OUTPATIENTS 48 PATIENTS	TOTAL PATIENTS
Under 6	3	2	13	18
7 to 13	21	12	12	45
14 to 20	13	4	14	31
21 or over	10	17	7	34
Uncertain	0	1	2	3

*Patients confined to infirmary.

TABLE 4

CLINICAL AND LABORATORY FINDINGS AND DURATION OF SYMPTOMS IN PATIENTS WITH INFECTIOUS MONONUCLEOSIS

	DURATION OF SYMPTOMS (DAYS)			TOTAL NUMBER OF PATIENTS
	0-21	*21-41*	*Over 41*	
	Patients	Patients	Patients	
Total number in group	57	58	14	129*
Athletes in training	9	3	0	12
Symptoms				
Exudate in throat	26	23	4	53
Palpable splenomegaly	32	42	8	82
Adenopathy outside neck	36	36	4	76
No fever (under 99° F.)	11	7	1	19
Fever for one week or more	14	27	4	45
Maximal lymphocytosis (per cent)				
Under 80	31	25	6	62
80 or over	26	33	8	67
Maximal heterophilic agglutination (titer)				
Under 1:40	7	4	1	12
1:40 to 1:80	6	5	2	13
1:160 to 1:640	30†	25†	8	63
1:1,280 or over	13†	23†	3	39

*Duration of symptoms uncertain in two patients.

†The apparently slightly longer course of illness of patients with high determinations of heterophil antibody is probably due to the greater number of determinations made in those patients whose symptoms persisted. When the duration of symptoms category is further divided, considerably greater scatter appears.

jects, the patient with the longest course of illness had incapacitating fatigue for five months after the onset of symptoms.

The second important finding is that bed rest did not shorten the duration of symptoms. The average recovery time of the Stillman A group (activity as desired and early discharge) was shorter than that of the Stillman B group (bed rest).* Although this apparently superior performance of group A may have been due to the addition of a small number of patients who were confined in the Stillman Infirmary for some days before assignment (see under Methods); nevertheless, it seems equally likely that the strict bed rest enforced on group B prolonged their fatigue and debility. Certainly these figures lend no support to the argument that all patients with infectious mononucleosis will recover more rapidly if kept at bed rest during the acute stage of the disease, however defined.

Another important, although negative, finding among these patients is the lack of correlation between any clinical or laboratory feature of the disease and the total duration of symptoms. Rapid recovery was not precluded by a

*For the entire Stillman group, the standard deviation in duration of symptoms calculated from the square of the logarithm is 0.0560. The difference between the means for group A and for group B is 0.4355. This is significant to a confidence level of approximately 0.1 per cent.

markedly positive heterophilic agglutination, a high percentage of lymphocytes, or a high or prolonged fever. Furthermore, none of the four jaundiced patients had symptoms for more than six weeks. Table 4 demonstrates these facts. In addition, the study demonstrated no correlation between duration of symptoms and the presence or absence of exudate in the throat, sore throat, puffy eyelids, punctate enanthema, adenopathy of any area, splenomegaly, rash or of an abnormal white blood cell count or sedimentation rate.

As Hobson, Lawson and Wigfield[3] pointed out, patients with infectious mononucleosis improve more rapidly than do the results of their laboratory tests. Some in this series felt well before the differential blood cell counts or heterophilic agglutination tests gave normal results.

The small group of 12 athletes who were in physical training when symptoms started recovered more rapidly than other students, but this group was too small for the results to be significant.

Symptoms suggesting a relapse developed in only one student. Five months after the initial onset of symptoms, he had recurrence of fatigue and enlarged posterior cervical nodes. However, the blood smear showed no atypical lymphocytes. Fifteen students had severe symptoms such as fever or sore throat which appeared many days after the onset of the initial symptoms, suggestive of the "humpbacked" course in mononucleosis described by Evans.[4]

The only complications in this group of 131 patients were minor: nosebleeds, three patients; bleeding ulcerated lingual tonsil, one patient; jaundice, four patients; very mild anemia, one patient; pharyngeal exudate and either beta hemolytic *Streptococcus* or *Staphylococcus aureus* in throat cultures, 23 patients.

Discussion

This series of consecutive cases of infectious mononucleosis quantitates the reported good prognosis for early complete recovery from this disease. Furthermore, moderate activity as desired seems to hasten recovery rather than impede it. This finding confirms Hoagland and Henson's[5] West Point policy of prescribing a program of graduated exercise for convalescent patients as soon as they become afebrile. Indeed, this finding could have been suspected from the very fact that asymptomatic infectious mononucleosis exists. Since there is no evidence that any of the life-threatening complications, such as meningoencephalitis, secondary infection, thrombocytopenia or hemolytic anemia, are promoted by activity, the physician cannot justify restriction of activity on these grounds, except when it is necessary to protect the patient from trauma which might rupture a fragile spleen.

Conclusion

Ninety per cent of a consecutive series of 131 patients with infectious mononucleosis recovered completely within six weeks; even fatigue had disappeared by this time. Furthermore, those allowed activity as desired during their illness and convalescence improved more rapidly than those kept at strict bed rest during the acute stage of the disease. Strict bed rest or prolonged limitation of activity is justified only in unusually severe cases of infectious mononucleosis or in the presence of severe complications.

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