INFECTIOUS MONONUCLEOSIS

A SYNDROME OR A DISEASE?

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The difficulty of defining any criteria for the clinical diagnosis of infectious mononucleosis is emphasized by the frequency with which the word "protean" occurs in accounts of the features of this disease. Tidy (1934) divided his cases into three groups—anginose, glandular, and pyrexial—and mentioned the frequent overlapping which occurred. This classification has been expanded to include those cases in which meningitis, haemorrhagic phenomena, jaundice, or nephritis is the main feature (Bernstein, 1940; Wechsler *et al.*, 1946). A respiratory form in which cough and nasal discharge predominated was mentioned by Vander Meer *et al.* (1945), while Chevallier (quoted by Bernstein, 1940) described an inguinal form in which lymphadenopathy was restricted to the inguinal region.

It is evident that the clinical criteria for the diagnosis of infectious mononucleosis are limited solely by the ever-increasing number of syndromes recognized as being caused by the disease. Halcrow *et al.* (1943) and Vander Meer *et al.* (1945) added the subclinical or asymptomatic form (*British Medical Journal*, 1947) which they encountered during a haematological and serological survey of apparently healthy contacts during an outbreak of the disease among military personnel. These authors also noted that, apart from these subclinical cases, many mild cases were seen which, if the presence of the outbreak had not been known and laboratory investigations not carried out, would have been diagnosed as colds, influenzas, or sore throats. The problem of diagnostic criteria is not limited to the clinical aspect, but is met in assessing the laboratory findings of suspected cases. Since the causative organism has not yet been isolated, confirmation of the diagnosis rests upon haematological and serological investigations.

In 1942 Paul and Bunnell discovered their non-specific test for the demonstration of heterophil antibodies. Soon after the introduction of this test it became apparent that many cases were occurring which, on clinical and haematological grounds, warranted a diagnosis of infectious mononucleosis but in which the Paul-Bunnell test yielded consistently negative results. Paul (1941) reported the test positive in 90% of 50 cases, but he mentioned a report by Erf, who found the test positive in only 40% of a series of cases. In the outbreak investigated by Halcrow *et al.* (1943) 68% of the patients had titres of 1 in 64 or more. However, in many such reports no mention is made of differential absorptions, and had differential absorption of the antibodies with guinea-pig kidney and ox-blood cells been done it is possible that the number of patients with significantly raised titres might have been even less.

Serology

Attempts have been made to explain the negative serology of otherwise characteristic cases of infectious mono-

nucleosis. Tidy (1952) stressed the significance of the time factor in the development of the antibodies, as did Kaufman (1944), who mentioned one patient who was seronegative on the tenth and eighteenth days, and who became seropositive five months later without any intervening illness. Hoagland (1952), however, found the test positive by the twenty-first day in all but 3 of his 56 cases. The possible effect of chemotherapy in preventing the development of antibodies was discussed by Fuller (1941), Tidy (1941), Paul (1941), and the *Lancet* (1941). The severity of the disease seems to be unrelated to antibody production, as patients may remain seronegative after a severe illness (Barber, 1941). Himsworth (1941) suggested that antibody development might be related to the absolute number of monocytes, while Warren (1941) thought that the percentage of abnormal lymphocytes might be the determining factor. Davidsohn (1937), Fuller (1941), and Whitby and Britton (1950) favoured the opinion that the seropositive and the seronegative cases were caused by different, though closely related, viruses. It is evident that the significance of a negative Paul-Bunnell test in an otherwise typical case varies with different authors. Hoagland (1952) insists on a positive test before calling the disease infectious mononucleosis, whereas others will accept the diagnosis so long as the clinical and haematological pictures are suggestive—in spite of a negative serology.

The characteristic blood picture of infectious mononucleosis has been fully described by Tidy (1934) and Bernstein (1940), and consists of an absolute and relative lymphocytosis accompanied by the appearance of numerous abnormal lymphocytes. Not infrequently this classical picture may be absent. Early in the disease a polymorphonuclear increase may occur, or the initial picture may be one of leucopenia. In some instances a lymphocytosis does not appear at any stage of the illness. The presence of abnormal lymphocytes is a constant feature of the disease, and in those cases without a lymphocytosis it may be the only suggestive finding. Reyersbach and Lenert (1941) reported a symptomless, seronegative outbreak of infectious mononucleosis in a children's convalescent home which has often been quoted as supporting evidence for the existence of a subclinical form of infectious mononucleosis (*British Medical Journal*, 1947). The complete absence of abnormal lymphocytes in all of these cases is against such a diagnosis, and suggests that the authors were, in fact, observing an outbreak of acute infectious lymphocytosis (Moyer and Fisher, 1950). Although the presence of abnormal lymphocytes is a characteristic finding in infectious mononucleosis, it is not pathognomonic. Similar cells have been described in association with many conditions, including mild upper respiratory infections (Stuart *et al.*, 1936; Warren, 1941), tonsillitis (Wilson and Cunningham, 1929), allergic conditions (Randolph and Gibson, 1944), brucellosis (Wise, 1943), measles (Benjamin and Ward, 1932), infective hepatitis (Thewlis and Middleton, 1925; Havens and Marck, 1946; Horstmann *et al.*, 1947), and rubella (Whitby and Britton, 1950).

The situation would appear to be that, although the blood picture is not pathognomonic of infectious mononucleosis, the characteristic changes associated with an upper respiratory infection, tonsillitis, or abdominal pain, together with generalized lymphadenopathy and often splenomegaly, frequently complete a syndrome for which the

diagnosis of infectious mononucleosis seems to be warranted and is often made. In a variable percentage of such cases this diagnosis is confirmed by the Paul-Bunnell test.

Present Investigation

The present paper describes an investigation of 27 cases in which the diagnosis of infectious mononucleosis was made on clinical and haematological evidence, but in all cases the Paul-Bunnell test was consistently negative. The nature of these infections is discussed and their features are compared and contrasted with those of infectious mononucleosis.

All of our patients were seen at the medical centre of an Army camp. Apart from one case, that of a boy aged 6, the ages ranged from 17 to 30. This investigation was initiated by the observation that cases of minor upper respiratory infections, sore throats, abdominal pains, or rashes were noticed to have a moderate generalized lymphadenopathy and blood changes suggestive of infectious mononucleosis. The cases were drawn from about 500 military personnel in the camp. It was decided that patients having lymphadenopathy in association with their illness should be further investigated haematologically and serologically. Many patients who would have qualified for further laboratory examination (because lymphadenopathy was present) were subsequently excluded because of the limited time available to carry out the investigations together with routine duties. Our cases occurred during September to November, 1952, after which they became less frequent and eventually uncommon. In view of the short period over which a large number of cases were observed, had a similar basic clinical picture, and gradually became less frequent, we concluded that we were dealing with a localized epidemic of the disease. In three instances—a medical orderly, one of the authors, and his wife—there was direct evidence that the cases were related by history of personal contact. Twenty-seven patients were examined and submitted for full haematological and serological investigations.

Clinical Features

Rhinitis.—Twenty-four patients complained of "stuffedness of the nose" and had copious nasal discharge. This was one of the presenting symptoms in 10 cases, the remaining 14 having had a marked rhinitis during the week preceding their reporting sick.

Sore Throat.—Six patients had an initial complaint of sore throat. Two of these had tonsillar and pharyngeal injection without exudate, two had follicular tonsillitis, and two had an ulcerative tonsillitis resembling Vincent's angina, although *Sp. vincentii* was isolated from only one of those ulcerative cases. Eight other patients had mild sore throat.

Headache.—This was not a prominent symptom, and occurred in only eight patients.

Cough.—Five patients had a cough, and in two of these the signs of mild bronchitis were noted.

Abdominal Pain.—In four patients this was the initial complaint. In one case pain in the left hypochondrium was accounted for by the presence of a tender palpable spleen. In another patient suprapubic pain and frequency of micturition suggested a cystitis, but this was ruled out by subsequent urinary examination. The pain was epigastric in the remaining two patients, and in all instances abdominal pain subsided within 24 hours.

Bowel Upsets.—Two patients complained of diarrhoea, and a further case had marked constipation. Gastro-intestinal upsets, nausea, and anorexia were not features of our cases.

Lymphadenopathy.—The presence of enlarged glands was, by selection, a constant feature of all cases. The cervical glands were most commonly involved and adenitis was almost invariably restricted to the posterior triangles of the neck. As has been observed previously, the left posterior triangle was most commonly involved (Tidy, 1934;

Halcrow *et al.*, 1943). Twenty-four patients had enlarged glands in the left posterior triangle of the neck, and the right posterior triangle was involved in only 13 cases. In four cases the enlarged cervical glands were tender. Initially the glands were characteristically small and firm. They tended to become larger and softer during the first week, increasing to the size of a marble. Enlargement of the axillary glands was noted in 15 patients, and inguinal glandular enlargement occurred in 21 patients, in two of whom the glands were tender.

Splenomegaly.—The spleen became palpable in nine cases, and in three of these was tender. In five patients splenomegaly was noted at the first attendance. In three cases the spleen became palpable during the next few days. In the remaining case the spleen first became palpable during a recurrence of the disease six weeks after his first attendance. In four of these cases the period over which splenomegaly was noted to persist was 1 day, 5 days, 6 days, and 10 weeks respectively.

Pyrexia.—Fever was not a constant feature of our cases, as was the experience of Halcrow *et al.* (1943). Seventeen patients were pyrexial at some stage of their illness, with temperatures varying between 99 and 102° F. (37.2 and 38.9° C.). In 16 cases the pyrexia subsided after two to four days. The remaining patient, a young boy of 6, had a prolonged low-grade pyrexia for 38 days.

Rash.—In three cases a rash was the presenting feature and two others developed a rash during their illness. The rash was urticarial in two cases and rubelliform in three. The eruptions all subsided within two days.

Herpes Labialis.—Three patients developed a mild herpes labialis.

Meningismus.—In one patient, a boy aged 6, an initial diagnosis of meningitis was made in view of the findings of neck rigidity and bilateral Kernig's signs, which subsided within 24 hours.

Case Reports

The following case-histories illustrate the variety of the clinical pictures we encountered in this series.

Case 9.—A recruit aged 18 complained of a head cold, present for one week. He was apyrexial, and had marked nasal congestion, and numerous enlarged lymph nodes were palpable in the left posterior triangle of his neck. One week later he was well, but the glandular enlargement persisted. Three weeks later he complained of a recurrence of his cold, and had a mild herpes labialis. The cervical lymphadenopathy had increased and glands were palpable in the right posterior triangle, axillae, and groins. He remained apyrexial. During the next 14 days his symptoms cleared and his glandular enlargement subsided.

Case 10.—A warrant officer aged 30 complained of nasal congestion and a painful neck. He was apyrexial and there were several small tender glands in the left posterior triangle of his neck. His spleen was firm and easily palpable. His inguinal glands became enlarged four days later. Six weeks after his first attendance the enlarged cervical nodes had almost resolved, but the spleen was palpable on deep inspiration.

Cases 5 and 13.—These were admitted with diagnoses of follicular tonsillitis. Both had a typical follicular tonsillar exudate. Their temperatures on admission were 100.8 and 99.4° F. (38.8 and 37.4° C.) respectively. Case 5 had enlargement of the lymph nodes in the right posterior triangle of his neck, in the left axillae, and in both groins. A rubelliform rash of bathing-trunk distribution was present, lasting three days. Case 13 had glandular enlargement in the left posterior triangle of his neck, axillae, and groins, and, in addition, both tonsillar glands were enlarged and tender. Case 5 became apyrexial after two days with penicillin therapy, and in Case 13 sulphonamides were effective in the same time.

Case 3.—A recruit aged 17 complained of suprapubic pain and frequency of micturition. His temperature was 99° F. (37.2° C.). He was tender suprapubically and had

multiple small cervical glands in the left posterior triangle. After two days some larger glands were palpable in his left axilla. A mid-stream specimen of urine, obtained on admission, was sterile. He became afebrile on the third day of his illness.

Case 11.—An N.C.O. aged 19 presented with tender inguinal adenitis. He was afebrile. The glands subsided within a week. Two weeks later he developed herpes labialis, nasal congestion, and sore throat. Forty days after his first attendance he returned with pain in the right side of his neck. The cervical glands of both posterior triangles were much enlarged, and in addition moderate axillary and inguinal lymphadenopathy was noted. His spleen became palpable two days later. Fifty-seven days after his first attendance he was admitted with a recurrence of his coryzal symptoms and rubelliform rash of bathing-trunk distribution. He had generalized lymphadenopathy and his spleen was again palpable. His temperature was 99° F. (37.2° C.). His rash, splenomegaly, and fever subsided within three days, when he was fit to return to duty.

Case 1.—A soldier's son aged 6 became suddenly ill and complained of headache. His temperature was 101.8° F. (38.8° C.), and the only other abnormal findings were some slight neck stiffness and bilateral Kernig's sign. His younger brother had been in hospital two weeks previously with a lymphocytic meningitis which, in view of the prevailing outbreak of poliomyelitis, had been labelled as non-paralytic poliomyelitis. On the following day our case was much brighter and his signs of meningismus had disappeared. Although he remained asymptomatic a low-grade pyrexia (99 to 99.4° F.—37.2 to 37.4° C.) persisted. On the seventh day of his illness small beadlike glands appeared in both posterior triangles of his neck, with larger nodes in his axillae and groins. He was then seen at regular intervals, when his pyrexia was noted. An x-ray film of his chest, and the Mantoux reaction, urine examination, and Paul-Bunnell test, yielded no positive results. He remained afebrile until the 38th day, and his lymphadenopathy persisted. He made a good recovery and has had no recurrence to date.

Serology

The number of serological tests and the period covered by them (as calculated from the first day of the illness) are shown in Table I.

TABLE I.—Showing the Number of Paul-Bunnell Tests Done in Each Case, the Period Covered, and the Highest Titre Obtained

Case No.	No. of Tests Done	Period Covered by Tests (Days)	Highest Titre Obtained
1	3	29	Negative
2	2	26	"
3	2	25	"
4	2	24	"
5	3	27	"
6	3	23	"
7	4	56	1 in 16
8	2	16	1 in 32
9	2	29	Negative
10	4	46	1 in 16
11	2	56	1 in 8
12	1	10	Negative
13	1	21	"
14	2	13	"
15	0	0	"
16	2	33	1 in 16
17	2	21	Negative
18	1	13	"
19	2	28	"
20	1	24	1 in 4
21	1	23	Negative
22	1	21	"
23	2	26	1 in 4
24	1	38	Negative
25	1	28	1 in 4
26	1	16	Negative
27	1	16	"

In Cases 7, 10, and 16 a titre of 1 in 16 was obtained, and Dr. A. G. Messer suggested that absorption tests should be carried out after initially increasing the titres by altering the concentration of the sheep-cell suspension from 1% to 0.2% and substituting centrifugation for incubation. With this altered technique a titre of 1 in 128 was obtained in

each case and this was reduced by guinea-pig kidney to less than 1 in 4, showing that the antibodies were not of the type associated with infectious mononucleosis.

Although in most cases the Paul-Bunnell tests were repeated, they yielded consistently negative results. In all cases the tests were carried out when the lymphadenopathy was at its height and when one would expect the test to be positive (Tidy, 1952).

Haematology

The blood changes are analysed in Table II. Although the lymphocyte count exceeded 50% of the total white-cell count in only 10 cases, all of our patients had a maxi-

TABLE II.—Analysis of Blood Changes

Max. White-cell Count	No. of Cases	Max. % of Lymphocytes	No. of Cases
11,000—	9	30-39	8
16,000—	10	40-49	9
20,000+	8	50-59	8
		60-69	2
Max. Absolute Lymphocytes		Max. % Abnormal Lymphocytes	
4,000—	8	10-19	12
5,000—	2	20-39	8
6,000—	9	40+	7
8,000—	6		
10,000+	2		

mum total lymphocyte count of over 4,000 per c.mm. These results are comparable with those recorded in other epidemics of infectious mononucleosis.

The morphology of the abnormal lymphocytes has been well described by Downey and McKinlay (1923). The lymphocytes which we classed as abnormal had the following features: (1) Their size varied from that of a small lymphocyte to that of a monocyte; the majority were large. (2) The cytoplasm was basophilic and in most cases showed vacuolation, which often gave the cells a foamy appearance. (3) The nuclei were frequently lobulated or had other morphological abnormalities; increased staining of the nuclear chromatin was often seen. The abnormal cells which we encountered belong to Downey's classes I and II.

Discussion

While many features of our cases resemble those of infectious mononucleosis, the differences are worthy of consideration.

Evans and Robinton (1950) commented on the apparent scarcity of reports of epidemics of infectious mononucleosis. They attempted to determine the degree of infectivity of the disease by examining the 63 close contacts of five seropositive cases of the disease at a girls' college. Only one of the contacts showed any abnormal lymphocytes and none had antibodies in diagnostic titre. It is of great interest that, although 21 of the contacts had recently suffered from such conditions as sore throat, upper respiratory infection, primary atypical pneumonia, and mumps, none showed the presence of abnormal lymphocytes. Evans and Robinton concluded that these results and the inability to transmit the disease experimentally (Evans, 1947, 1950) showed that infectious mononucleosis was essentially a sporadic and not an epidemic disease.

Hoagland (1952), from a study of 56 seropositive cases, concluded that infectious mononucleosis had a restricted clinical picture and that the concept of the disease as one of protean manifestations arose from the inclusion of seronegative cases, which he did not regard as true examples of infectious mononucleosis. He surveyed the clinical picture as described in other reports where all the cases were seropositive. Thus acute abdominal pain was not a symptom of any of his cases, nor was meningitis noted. Read and Helwig (1945) recorded only three examples of meningitis out of 300 seropositive cases. None of Hoagland's patients had a rash, and Milne (1945) encountered a rash in only 3.6% of a seropositive group of patients.

In contrast, the reports of Halcrow *et al.*, Vander Meer *et al.*, and Wechsler *et al.*, which contain a large proportion of seronegative cases, present a wide and variable clinical picture with a higher incidence of rashes. In all of these reported epidemic cases, including those of Tidy and Daniel (1923), the lymphocyte count in individual patients was usually below 50% of the total white-cell count. The reliability of the serological results recorded in these epidemics is questionable, as few cases had absorption tests done. Wechsler *et al.* reported that absorption tests were occasionally carried out in their investigation, but that the results were "not uniformly satisfactory." Leibowitz (1952) studied the sera obtained from normal subjects and from cases of various diseases other than infectious mononucleosis, and he concluded that, with regard to heterophil antibodies, any titre below 1 in 896 should be confirmed by differential absorption tests before infectious mononucleosis was accepted as the cause. We consider that it is the omission of absorption tests at such relatively low titres (Table III) that lays the serology of these epidemics open to criticism. It might well be that, apart from a few cases of sporadic seropositive infectious mononucleosis which were being observed simultaneously with the epidemic disease, all of the cases were, in fact, seronegative.

Study of our own cases reveals that, although any individual patient would appear to qualify for the diagnosis of infectious mononucleosis, the series as a whole has the same features as we have noted in reports of previous epidemics. These features are not typical of seropositive sporadic cases of infectious mononucleosis—namely, high degree of infectivity, a lymphocyte count which is generally less than 50% of the total white-cell count, the frequent occurrence of a rash, a frequently apyrexial course, and a protean clinical picture. It is of interest that Stuart *et al.* (1936) noted many "borderline cases. . . . A mild infection of the upper respiratory tract with . . . moderate or marked enlargement of the cervical lymph nodes and a blood picture in which the percentage of lymphocytes is higher than usual and in which the characteristic abnormal lymphocytes are seen in moderate numbers. . . . Serologic tests have almost invariably proved negative." This group of patients is in many ways similar to our own.

The constant references to these features in accounts of epidemics, together with the evidence that shows infectious mononucleosis to be of low infectivity, prompt us to regard our own cases and those of previous epidemics as examples of a different disease, although closely allied to infectious mononucleosis. It would seem to be inadequate to refer to the epidemic form simply as "seronegative infectious mononucleosis," as the negative serology is only one of the differentiating features, and the term "epidemic variant" is suggested (Table IV). It is possible that during a loca-

TABLE IV.—Comparing the Features of Sporadic Infectious Mononucleosis With Those of the Epidemic Variant of the Disease

	Infectious Mononucleosis	
	Sporadic Form	Epidemic Variant
Clinical picture ..	Restricted	Protean
Severity	Severe or moderately severe	Usually mild; may be severe
Pyrexia	Invariably occurs	Inconstant
Sore throat ..	Very common	Common
Rash	Uncommon	"
Splenomegaly ..	Noted in 30–40% of cases	Noted in 30–40% of cases
Infectivity ..	Very low	Very high
Serology	Paul-Bunnell tests positive after differential absorptions	Paul-Bunnell tests negative after absorptions
Haematology ..	(a) Lymphocytes exceed 50% of white cells (b) High percentage of abnormal lymphocytes	(a) Lymphocytes do not usually exceed 50% (b) High percentage of abnormal lymphocytes

lized outbreak of this condition some of the more severe cases may be admitted to hospital, where they may be reported as "examples of sporadic infectious mononucleosis with a negative Paul-Bunnell test."

Summary

A series of 27 cases of a disease resembling infectious mononucleosis but with a negative Paul-Bunnell test is described.

The value of the Paul-Bunnell test and the occurrence of abnormal lymphocytes in other diseases are discussed.

TABLE III.—An Analysis of Reported Epidemics of Infectious Mononucleosis

Authors	Cases	Haematology	Serology	Rash
Vander Meer <i>et al.</i> (1945) ..	26 clinical 217 subclinical	No details of blood findings, apart from recording of occurrence of abnormal lymphocytes	Clinical cases: 18 had titres exceeding 1/56, but actual levels not given Subclinical cases: 74 examined serologically 61 titres less than 1/56 5 had titres of 1/56 5 " " " 1/112 3 " " " 1/224	Noted in 30% of cases
Halcrow <i>et al.</i> (1943) ..	125 clinical 171 subclinical	Mononuclears varied between 40 and 60%	Clinical cases: 61 had titres not exceeding 1/64 40 " " of 1/128 15 " " " 1/256 9 " " " 1/512 Subclinical cases: 122 had titres not exceeding 1/64 35 " " of 1/128 12 " " " 1/256 2 " " " 1/512	Noted in 8% of cases
Wechsler <i>et al.</i> (1946) ..	500	68% of cases had less than 50% lymphocytes	38% had titres not exceeding 1/56 73% " " " 1/112 14% " " " exceeding 1/448	Noted in 16% of cases
Stevenson and Brown (1943)	34 clinical 89 subclinical	Mononuclears varied between 40 and 50%	Paul-Bunnell test positive after absorptions in only 20 (15%) of cases	No case had a rash
Goldthwaite and Eliot (1951)	5 clinical 21 subclinical	No subclinical case had lymphocyte count exceeding 50%	1 case (with complicating hepatitis) had a titre of 1/1,280 All other cases seronegative	No case had a rash
Tidy and Daniel (1923) ..	24	In only 1 case did lymphocytes exceed 60%. Of 19 others, 7 had lymphocytes exceeding 50%		No case had a rash
McFarlan and Macfarlane (1943)	78	10 cases were fully investigated; all had less than 50% lymphocytes	22 cases were examined serologically and all were found to be seronegative	No case had a rash
Present series	27	In 63% of cases lymphocytes did not exceed 50%; in 30% lymphocytes were between 50 and 59%; in 7% lymphocytes were between 60 and 69%	All cases were seronegative	Noted in 14% of cases

The clinical, serological, and haematological features of these cases and those of previously reported epidemics are presented and compared with the features of sporadic seropositive cases of infectious mononucleosis.

Certain outstanding differences between sporadic and epidemic forms of infectious mononucleosis are stressed and it is suggested that the two forms differ in aetiology.

The term "epidemic variant of infectious mononucleosis" is suggested for this condition.

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The report of the Regius Professor of Medicine at Oxford for the year ending July 31, 1953 (*Oxford University Gazette*, February 15, 1954), refers to the proposed extension of the department of anatomy and the "magnificent new building" which is to be built for the department of physiology. In the departments of pathology and pharmacology shortage of teaching space will continue to hamper improvement. The Regius Professor expects that "the increase from 65 to 76 in the annual admission of medical students will be absorbed by the preclinical departments without any effect more troublesome than a perpetuation of rather lower standards of teaching." During the year concerned there were 80 clinical students, including 13 from Cambridge, four from Leeds, and one from London. In the final Oxford B.M. examination the students who had done their clinical training at the Radcliffe Infirmary rather more than held their own with those trained in the London hospitals and elsewhere.

TREATMENT OF ELDERLY PSYCHIATRIC PATIENTS

USE OF A DIAGNOSTIC CLASSIFICATION

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It has become widely recognized that mental and nervous illnesses occurring in old age do not necessarily result in a permanent state of emotional and intellectual disorganization. In many instances the disturbance is temporary and can be alleviated or even removed by appropriate treatment. Clow (1948) found that a recovery rate of 24.1% and an improvement rate of 40% could be obtained if there was a careful selection of patients from favourable social circumstances. In public mental hospitals, where all types of patients are admitted, Cook *et al.* (1952) showed that 40% of patients over 65 could be discharged from hospital. It is therefore of importance to weigh up the chances of successful psychiatric treatment in old people. This is particularly necessary nowadays, when the accommodation for the treatment and care of the aged sick is very limited. Until the time when psychiatric facilities in this country are unlimited some screening method is essential to ensure that the limited facilities available are used to the utmost advantage both to the patient and to the community. Our main aim in this paper is to show that a simple diagnostic screening results in the conservation of active psychiatric care for those patients most likely to benefit from it.

Suggested Solution of Problem

This study was undertaken to test the hypothesis that for patients over 60 referred to a psychiatric clinic the determination of appropriate treatment would be materially facilitated by placing them in one of the following three diagnostic and prognostic categories: (a) dementias of old age—that is, irreversible disorganizations of the personality due to degenerative brain changes; (b) long-standing neurotic, psychotic, or character disorders; and (c) recent reactions, either affective or toxic-confusional.

It may be doubted whether it is possible in practice to classify patients in the older age groups, even under broad diagnostic headings, for it is the exception rather than the rule for elderly patients to suffer from one disease alone. There are, without doubt, patients who present a clinical picture indicative of a combination of "functional" disorder and organic dementia. Affective disturbance is often the leading symptom in cerebral arteriosclerotic dementia, and less frequently in senile dementia, and this association may not be purely due to chance as is sometimes suggested. On the other hand, the occurrence in aged patients of uncomplicated functional psychiatric illnesses in contradistinction to organic psychoses has been clearly recognized since the days of classical descriptive psychiatry, and it is not surprising that, using case records alone, it was possible to differentiate between psychoses showing predominantly either organic or functional features (Post, 1951). Similarly, Roth and Morrissey (1952) were able to point out that senile dementia and depressive psychosis occurring during the senium are two quite separate conditions.