High Prevalence of Psychiatric Morbidity in a Medical Intensive Care Unit

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ABSTRACT AND KEYWORDS

This study seeks to determine the prevalence of psychiatric morbidity within a medical intensive care unit, examine its correlation with the various physiological parameters and delineate any clinical predictors for psychiatric morbidity. Seventy-seven patients who gave informed consent were administered the General Health Questionnaire (GHQ), Acute Physiological And Chronic Health Evaluation II (APACHE II) and thyroid function tests were performed. A high prevalence of psychiatric morbidity was found (36.4%). However, no statistically significant association was found between psychiatric morbidity and gender, age, APACHE II scores and thyroid function indices.

Nevertheless, it is hoped that the index of suspicion for psychiatric morbidity can be raised in order to optimise the clinical management of patients within this setting.

Keywords: psychiatric, morbidity, medical, intensive care, APACHE II

INTRODUCTION

Numerous studies have found an association between physical and psychiatric disorders among general hospital inpatients[1,2]. Acute organic disorders, adjustment and anxiety disorders are particularly common amongst hospital inpatients[3]. The overall prevalence rates range from less than 20% to over 60% depending on the methodology (single or two-stage design), instruments used (screening questionnaire versus a structured clinical interview) as well as nature of speciality of ward[4,6,7]. Maguire et al[4] used a two-stage design and reported a prevalence rate of 23% for psychiatric morbidity in two medical units in the United Kingdom. Using the General Health Questionnaire-28 (GHQ-28)[5], Bridges and Goldberg[6] found evidence of psychiatric morbidity in 43% of his study sample of patients with neurological disorders. Cavanaugh[7] administered the same screening instrument

in 335 general medical patients and estimated the prevalence of psychiatric morbidity to be 61%.

Psychiatric morbidity compounds the disability and suffering in medical patients[8]. Furthermore, it increases the consumption of medical resources[9], complicates medical treatment[10] and can result in poorer outcome[11].

Mayou and Hawton[12] emphasised that knowledge of the overall prevalence of psychiatric morbidity was important as a basis for service planning and resource utilisation in the general hospital. Most research on the psychiatric morbidity in the general hospital related to general medical patients with specific physical disorders[1,13]. There is a lack of literature on the prevalence of psychiatric morbidity in patients admitted to the intensive care units, hence this study seeks[1] to determine the prevalence of psychiatric morbidity in a medical intensive care unit (MICU)[2], to investigate the correlation between psychiatric morbidity and various physiological parameters[3] to delineate the clinical predictors of psychiatric morbidity in this setting and[4] we hypothesise that raised thyroid hormones and APACHE II scores are associated with psychiatric morbidity.

METHODS

Setting and subjects

The study was conducted on patients admitted to the eight-bedded medical intensive care unit which serves the Department of Medicine at Alexandra Hospital. Of the 102 consecutive patients admitted to MICU from January to March 1999, 77 patients gave written, informed consent for participation in the study. Patients were seen within twenty-four hours of admission and those who were unconscious or too ill to participate were excluded from the study. The protocol was approved by the hospital ethics committee.

Research instruments

1. General Health Questionnaire (GHQ)

The 30-item GHQ was chosen mainly because it had been well validated in the Chinese population[14]. It had been used to assess hospital inpatients[15,16]

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and was rapid to administer. The 30 items could be grouped into five factors, namely anxiety, depression, feelings of incompetence, difficulty in coping and social dysfunction[17]. The traditional scoring method (0-0-1-1) was employed and the cut-off score for a 'case' was 5[18].

2. *Acute Physiological And Chronic Health Evaluation II (APACHE II)*
The APACHE II is a scoring system with good validity that is commonly used in the intensive care units to measure disease severity[19]. The overall score is the sum total of three different components, namely the acute physiological status, chronic health status and age.

Laboratory assays
Free thyroxine (freeT4), triiodothyronine (total T3) and thyroid stimulating hormone (TSH) were measured using microparticle enzyme immunoassays. The normal range for free T4 was 11.0 to 24.6 pmol/L, the sensitivity was 0.3 pmol/ L and the intra-assay and inter-assay coefficients of variation were 1.8% and 3.5% at 8.7 pmol/L and 1.7% and 3.3% at 21.1 pmol/L respectively. The normal range for total T3 was 1.57 to 2.59 nmol/L; the sensitivity was 0.2 nmol/L and the intra-assay and inter-assay CVs were 8.0% and 7.9% at 1.0 nmol/L, and 4.9 % and 5.8% at 2.1 nmol/L respectively. The normal range for TSH was 0.4 to 3.8 mIU/L, the sensitivity was 0.005 mIU/L and the intra-assay and inter-assay coefficients of variation were 8.6% and 8.7 % at 0.034 mIU/L and 2.1% and 3.3% at 0.91 mIU/L respectively.

Statistical analysis
Values were expressed as mean ± standard deviation. Normality of quantitative data was assessed using the 1-sample Kolmogorov-Smirnov test. T tests were used when normality assumptions were satisfied, otherwise the Mann Whitney U test was utilised. Associations between categorical data were evaluated using Chi-square test with odds ratio presented where applicable. Multiple logistic regression was carried out to adjust for relevant covariates. The statistical analysis was done using the Statistical Package for Social Sciences (SPSS) Version 8.0 and statistical significance was obtained with p value <0.05.

RESULTS
Demographic characteristics
Of the 102 consecutively admitted patients, 25 (24.5%) were excluded either because they were too ill (n = 16) or refused to give consent (n = 9). The patients who did not participate in the study had significantly higher APACHE II scores (p<0.001) indicating that they

were more severely ill (11.6 ± 1.2) compared to the participants (6.7 ± 0.5). They were also significantly older (63.5 ± 20.9 years) than the patients who took part in the study (54.3 ± 16.6 years, p = 0.009). The final sample consisted of 77 subjects, 53 (69%) of whom were male. The mean age was 54.4 ± 16.6 years (range 12 to 81 years). In terms of racial distribution, there were 34 Chinese (44.2%), 29 Malay (37.7%), nine Indian patients (11.7%) and five others (6.4%). The principal diagnoses are listed in Table I. The average duration of stay in the MICU was 49.3 ± 2.7 hours (range 7 to 120 hours) and the mean APACHE II score was 6.7 ± 0.5 (range 0 to l8). There were no deaths in the final sample.

Table I. Principal diagnoses.

Diagnosis	Patients	%
Cardiovascular diseases	56	72.8
Respiratory diseases	10	13
Endocrine conditions	3	3.9
Infections	3	3.9
Neurological conditions	2	2.6
Gastrointestinal conditions	2	2.6
Renal illness	1	1.2
Total	77	100

Prevalence of psychiatric morbidity
The mean GHQ score for the sample was 5.7 ± 6.6 (range 0 to 23). Twenty-eight patients scored more than five points (cases) constituting a prevalence rate of 36.4% (95% CI 23.9% to 48.9%). Using the factors (anxiety, depression, feelings of incompetence, difficulty in coping and social dysfunction) individually as independent variable in multiple regression analysis with cases/non-cases as dependent variable and adjusting for age, sex, APACHE II and thyroid function parameters, Table II shows the differences in the factor scoring between the two groups.

Table II. Cases scoring higher over non-cases by:

Factor	Estimate	95% CI	p-value*
Anxiety	3.0	2.3 to 3.7	<0.001
Depression	1.6	1.4 to 2.4	<0.001
Incompetence	1.9	1.1 to 2.1	<0.001
Difficulty in coping	2.3	1.8 to 2.9	<0.001
Social dysfunction	1.5	1.0 to 1.9	<0.001

• Adjusting for age, sex, APACHE II score and thyroid function indices

Correlations and predictors of psychiatric morbidity
Females were more likely to be cases (GHQ score more than 5) compared with males (p = 0.03, Chi-square test, OR = 3, 95% CI 1.1 to 8.2). On average, female

subjects scored four points higher on the GHQ-30 compared to male subjects. Comparing cases with non-cases, there were no significant differences in age (52.9 ± 17.8 vs. 55.3 ± 16.1 years), duration of stay (46.4 ± 24.4 vs. 50.9 ± 23.0 hours), TSH (5.4 ± 20.2 vs. 1.3 ± 0.8 mIU/L), total T3 (1.4 ± 0.3 vs. 1.3 ± 0.3 nmol/L) and free T4 (15.3 ± 3.7 vs. 14.7 ± 2.9 pmol/L).

There was no significant difference in GHQ scores or 'caseness' between the age groups (below 65 versus above 65 years old), periods of stay (below 72 hours versus above 72 hours) and principal diagnoses. No significant correlation was also found between the GHQ scores and APACHE II scores as well as thyroid function parameters. Using logistic regression with cases/non-cases as dependent variable and age, sex, TSH, total T3, FT4 and APACHE II as covariates, no specific variable was identified that was statistically significant.

DISCUSSION

The prevalence of psychiatric morbidity was found to be 36.4% in this study. It is considerably higher than the psychiatric morbidity (16%) reported for the local general population[20]. However, it is comparable with the findings of the study by Botega et al[21] on patients within a general hospital environment although not within the setting of an intensive care unit. Within the context of a Brazilian University hospital, Botega et al estimated the prevalence of psychiatric morbidity to be 36% amongst 78 consecutive admissions to a general medical ward. On the other hand, Clarke et al[22] examined 209 general hospital inpatients and found the prevalence of psychiatric morbidity to be 30%.

Of note was the preponderance of patients with the principal diagnoses of cardiovascular diseases (72.8% of all subjects). More than two-thirds of these subjects were admitted due to symptoms related to ischaemic heart disease. Anxiety symptoms are common in the first few days of post myocardial infarction[23]. Psychological distress may be associated with arrhythmias[24] and affective disturbances may be associated with sudden death and an increased rate of mortality[11]. In this study, there were no significant differences in the psychiatric morbidity between the cardiac and non-cardiac group of patients.

Female gender was found to be correlated with psychiatric morbidity but it did not achieve statistical significance. Clarke et al[22] in their study of medical and surgical inpatients also did not find significant gender differences in estimated prevalence of psychiatric morbidity based on GHQ or anxiety scores. This was in contrast to the study by Abiodun and Ogunremi[25] who found that female patients were more likely to suffer from psychiatric disorders. The association with

older age was also noted by them but not so in our study. It is likely that this study was biased against the elderly and more severely ill (patients with higher APACHE II scores) as they did not participate in the study. This may represent a special subpopulation in need of special psychiatric attention and care in the general hospital, hence warranting further study.

The APACHE II scales are used routinely to measure disease severity in the intensive care units and abnormal thyroid parameters had been found in patients within this setting[26]. Both APACHE II and thyroid parameters (especially total T3) were found to be useful in outcome prediction of the patients[27]. However, the utility of these physiological parameters in predicting psychiatric morbidity in the intensive care unit has never been evaluated. Although the 'cases' were associated with lower APACHE II score and higher fT4, total T3 and TSH, no specific variable achieved statistical significance in this study.

It was observed that none of the cases was referred for psychiatric consultation. The absence of psychiatric referrals was not surprising in light of previous reported low referral rates of around 2%[28,29]. Some possible reasons included under-recognition of cases, general pessimism about the successful treatment of psychiatric illnesses, fear of medical team regarding patient's reaction to the psychiatric referral or absence of a psychiatric inpatient unit at the time of the study[30].

Due to the nature of protocol, patients who were too ill could not take part in the study. The psychological distress in this group cannot be assessed hence disallowing a more complete evaluation of the nature of the psychiatric morbidity within the intensive care setting. Other pertinent physiological parameters that have been associated with derangements in the medically ill such as cortisol level could have influenced outcome as well. Lastly, we may not be able to generalise results from this study to other units such as the surgical, neurosurgical or cardiothoracic intensive care units due to the different physical disorders in the different patient groups and hence their associated psychiatry morbidity.

CONCLUSION

Psychiatric morbidity is common in the patients admitted to the medical intensive care unit. It is thus very important for the treatment team to have an appreciation of the high prevalence of psychiatric morbidity. A high index of suspicion and recognition for such cases is needed in order to intervene appropriately. This is in line with the holistic, biopsychosocial approach that should be adopted in the management of any patient, especially in the inpatient and intensive care unit setting.

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