原 著

精神科住院病人攻擊傾向之評估

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目的：以機率預測方式評估攻擊行爲出現的可能性，並檢測其運用。**方法：**針對 111 位連續新住院的精神科病人，由住院醫師及護理人員依臨床資料分別評估其出現暴力行爲的機率，並用外顯攻擊行爲量表（OAS）來記錄病人後續出現的攻擊行爲。**結果：**住院醫師及護理人員評估攻擊行爲出現的危險性，其信度爲 kappa＝0.52，而後續出現的攻擊行爲和預測機率有正相關，其中任何型式之攻擊行爲出現的比例在高、中、低三分的機率預估中都比針對他人之攻擊行爲出現的比例高，針對他人之攻擊行爲在臨床上有被高估的傾向。**結論：**本研究所使用的攻擊行爲危險性之預測方式，在臨床上有相當高之可用性。

關鍵詞：暴力，攻擊，精神科病人，外顯攻擊行爲量表
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Original Article

Assessment of the Potential for Aggressive Behavior in Psychiatric Inpatients

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Objective: This study used a probabilistic approach to assess the potential for aggressive behavior in psychiatric inpatients. **Methods:** Residents and nurses independently rated the probability that each of 111 consecutive newly admitted psychiatric patients would exhibit aggressive behavior during hospitalization. The later occurrence of aggressive behavior was measured with Overt Aggression Scale. **Results:** The inter-rater reliability between residents' and nurses' assessments of risk of violence was moderate (kappa = 0.52). Ratings of aggressive behavior showed an increase in the proportion of violent patients as the level of estimated risk increased. There was a close correspondence between clinical risk estimates and subsequent display of any type of aggressive behavior. However, the rate of aggression against other people was usually overpredicted. **Conclusions:** The findings of this study support the use of the probabilistic approach in the clinical assessment of the potential for aggressive behavior.

Key words: violence, aggression , psychiatric patients , Overt Aggression Scale
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Introduction

Evaluation of the patients' potential for aggression is an important component of care in psychiatric inpatient settings. Two different approaches are commonly used in the assessment of aggressive incidents. The first focuses on the personal factors associated with aggressive behavior, such as age, race and gender [1,2], psychiatric diagnosis and psychopathology [3,4], and history of violence [1,5]. The second approach emphasizes the interaction between personal and situational variables. Previous studies have identified contextual risk factors for aggressive behavior including staffing patterns [6], social support network [7], and family dynamics [8]. Recently, Beauford et al (1997) reviewed the initial evaluation records for each of 328 psychiatric inpatients and suggested that the quality of the initial therapeutic alliance between the therap-

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ist and patient might affect the patients' potential for aggressive behavior [9].

However, some authors have acknowledged difficulty in using those risk factors for the prediction of aggressive behavior in psychiatric inpatients and suggested that such assessment would require the use of complex models of behavior [10,11]. Assessment of aggressive behavior requires clear delineation of the following concepts: 1) time period within which the outcome can occur; 2) description of the clinical setting and sample; 3) choice of outcome measures; and 4) selection of an appropriate comparison group [12,13].

This study used a probabilistic approach to the assessment of the risk of aggressive behavior among psychiatric inpatients. Available information was incorporated to make an assessment of patients' level of risk of engaging in aggressive behavior, allowing for the evaluation of a prediction within a short period of time and within the context in which the data used in prediction is obtained. Our methodology was similar to the initial study of McNiel et al. (1991) on the clinical assessment of risk of violence among psychiatric inpatients [14]. The purposes of this study were to address 1) the extent of agreement between psychiatric residents' and nurses' estimates of risk of aggressive behavior among newly admitted psychiatric patients; and 2) the relationship between these estimates and actual exhibited aggression .

Methodology

Subjects

The subjects were consecutive newly admitted psychiatric patients during a 7-month period (January to July 1997). The study setting was a 30-bed acute psychiatric ward of a university-based general hospital. We did not selectively admit disturbed patients into the ward. Typically, the new inpatients were first evaluated by psychiatric nurses or residents. The nursing staff or psychiatric residents completed a joint interview with the patient and family and reviewed records or made telephone calls to gather other necessary information. The resident then presented the findings to a consultant psychiatrist. The consultant psychiatrist then conducted a brief interview with the patient to resolve any remaining uncertainties and together with the resident and nurse, determined a psychiatric diagnosis based on DSM-IV [15]. The ensuing disposition for the patient was made after the clinical assessment.

Assessment of the Risk of Aggressive Behavior

Estimates of the potential for aggressive behavior were made independently by the nurse and resident who were involved with the admission of each patient to the ward. All of the available information including results of the joint interview with the patient and family members and previous medical records were used in the risk assessment. The nurse and resident estimated the probability that the patient would exhibit aggressive behavior during his hospitalization by making a mark on an eighteen-centimeter continuum ranging from 0% (definitely will not show aggressive behavior) to 100% (definitely will show aggressive behavior).

Overt Aggression Scale

The Overt Aggression Scale (OAS) [16]

was used to measure aggressive behavior. Nursing staff filled out an OAS form either immediately after any aggressive incident or before off-duty time when patients were aggressive during that shift. We used the OAS to increase the reliability and validity of our measurement of aggression because a reliance on formal incident reports is thought to often lead to underestimation of aggressive episodes [17]. The OAS measures four types of aggression (verbal, against self, against objects, and against other people). However, of these types, aggression against self, which is similar to self-harm or suicidal behavior, has been shown to be different from other types of aggressive behavior [18]. Therefore, only three subscales of the OAS (verbal, against objects, and against other people) were included in our analysis.

An aggressive episode was defined as the occurrence of any behavior that is listed on the OAS. Because of the difficulty in documenting every episode of aggression among patients who commit aggressive acts with very high frequency, separate incidents were considered according to the clinical judgement of the intake nursing staff. The head nurse would then check the rating of each incident during the day shift and reach a rating consensus with the intake nurse. Patients were rated as many items for each type of aggression as applied. For example, for verbal aggression, a patient was rated on severity level 1 and 2 if he made loud noises (level 1) and yelled mild personal insults (level 2) during the aggressive episode. This procedure was used to gain a comprehensive profile of aggressive incidents.

Statistical Analysis

Inter-rater reliability between residents' and nurses' ratings of patients' probability of exhibiting aggressive behavior during hospitalization was measured using the kappa statistic [19]. Chi-square analyses were used to evaluate the association of clinically assessed risk at the time of admission with the occurrence of aggressive behavior during hospitalization. To ensure the validity of chi-square analyses and to enable determination of the kappa statistic, the probability estimates of inpatient aggression were transformed at average into three categories of risk: low (0% to 33.3%), moderate (33.4% to 66.7%), and high (66.8% to 100.0%).

Results

A total of 992 OAS records were gathered on 111 psychiatric inpatients. Fifty eight (52.3%) of the patients were men and 53 (47.7%) were women. Their mean age was 38.0 ± 13.8 years. The numbers of married (48) and unmarried (50) were almost equal. The length of employment in the past year was mostly less than 6 months (73.9%). The mean number of years of education was 9.5 ± 3.7 (Table 1). More patients had a diagnosis of schizophrenia (47.7%) than bipolar disorder (34.2%). The average number of episodes of aggression per patient varied widely (5.4 ± 7.7) (Table 2). Sixty eight (61.3%) of the patients exhibited some form of aggression at some time during their hospitalizations, with 60.4% of the patients exhibiting verbal aggression, 42.3% attacking objects, and 41.4% exhibiting aggression against other people.

Table 1. Demographic characteristics of psychiatric inpatients (N=111)

Characteristics	N (%)	Mean±SD (Range)
Age		38.0±13.8 (15-73)
Education (years)		9.5± 3.7 (0-17)
Sex		
Male	58 (52.3)	
Female	53 (47.7)	
Marital status		
Married	48 (43.2)	
Never married	50 (45.0)	
Others	13 (11.7)	
Employment in the past year		
< 6 months	82 (73.9)	
≧6 months	29 (26.1)	

Table 2. Clinical characteristics of psychiatric inpatients (N=111)

Characteristics	N (%)	Mean±SD (Range)
Age at onset of psychiatric disorder		30.9±13.8 (14-68)
No. of previous hospitalizations		3.2± 2.9 (1-15)
Days of this hospitalization		33.3±27.9 (2-132)
Probability estimate		
Nurses		50.3±31.7 (0.0-100.0)
Residents		47.3±31.7 (0.0-100.0)
Episodes of aggression (per patient ; N=105)*		5.4± 7.7 (0-32)
Diagnosis		
Schizophrenia	53 (47.7)	
Bipolar disorder	38 (34.2)	
Others	20 (18.0)	
Family history of psychiatric morbidity		
Yes	33 (29.7)	
No	78 (70.3)	

* Six outlying values were excluded (skewness decreasing from 3.4 to 1.5 ; kurtosis decreasing from 13.9 to 1.3)

The mean value of the nurse' estimates of patients' probability of assault was 50.3 ± 31.7% while that made by residents was 47.3 ±31.7%. The overall kappa statistic based on the three risk categories of the estimates (low, moderate, and high) was 0.52.

Patients rated as having a higher probability of aggressive behavior were more likely to exhibit aggressive behavior during their hospitalizations (Table 3). The relationship between

Table 3. Relationship between residents' and nurses' ratings of patients' risk of exhibiting aggressive behavior and later occurrence of aggression against others or any aggressive behavior during hospitalization

Aggression in hospital	All patients (N=111)	Residents' ratings			Nurses' ratings		
		Low* (N=46)	Moderate* (N=23)	High* (N=42)	Low* (N=41)	Moderate* (N=28)	High* (N=42)
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Aggression against other people[a]							
Yes	46 (41.4)	5 (10.9)	9 (39.1)	32 (76.2)	11 (26.8)	6 (21.4)	29 (69.0)
No	65 (58.6)	41 (89.1)	14 (60.9)	10 (23.8)	30 (73.2)	22 (78.6)	13 (31.0)
Any aggression (verbal, against objects, against others)[b]							
Yes	68 (61.3)	16 (34.8)	14 (60.9)	38 (90.5)	20 (48.8)	14 (50.0)	34 (81.0)
No	43 (38.7)	30 (65.2)	9 (39.1)	4 (9.5)	21 (51.2)	14 (50.0)	8 (19.0)

* Risk of exhibiting aggressive behavior during hospitalization: low (0–33.3%), moderate (33.3–66.7%), high (66.8–100.0%)

a. For residents' ratings, $\chi^2=38.7$, df=2, $p<.001$; for nurses' ratings, $\chi^2=21.4$, df=2, $p<.001$

b. For residents' ratings, $\chi^2=28.7$, df=2, $p<.001$; for nurses' ratings, $\chi^2=11.0$, df=2, $p=.004$

residents' assessments of risk and the later occurrence of aggressive behavior against other people or any type of aggressive behavior was found to be significant. Furthermore, the actual percentage of patients who engaged in aggressive behavior was within the range expected based on probability estimates. For example, 14 (60.9%) of the 23 patients estimated to have a 33.4 to 66.7% chance of exhibiting aggressive behavior subsequently did engage in some form of aggressive behavior. Thirty two (76.2%) of the 42 patients rated as having a high level (66.8–100%) of risk were observed to engage in physical aggression against other people during their hospitalizations. A similar pattern was also evident with the nurses' evaluations. However, a lower proportion of patients rated by nurses as having a moderate to high level of risk engaged in aggressive behavior compared to those rated by residents as having the same level of risk. For instance, 21.4% of the patients rated by nurses and 39.1% of the patients rated by residents as having a moderate level of risk were actually to commit physical aggression against other people.

Discussion

The strengths of the present study include its prospective design, the selection of a sample from all psychiatric inpatients rather than from a group previously identified as at high risk of aggression, the use of probabilistic estimates of risk of aggression, and the use of the OAS to ascertain the severity of aggressive behavior. Kho et al. [12] found that the inter-rater reliability among OAS raters with no

special training was high (mean concordance rate 0.93) or moderate (weighted kappa 0.58). Their results support the applicability of the OAS to routine clinical practice and in a variety of clinical settings. As to nurses' and residents' probabilistic estimates of risk of aggressive behavior, the kappa (0.52) indicated moderate reliability [20] when the estimates were categorized as high, moderate, and low levels. This finding indicates that residents and nurses were applying similar sets of criteria in evaluating the potential for aggressive behavior among psychiatric inpatients.

Because the evaluation of the potential for aggressive behavior is inherently probabilistic, i.e., some people rated as low risk will become violent and some people rated as high risk will not become aggressive, probabilistic methods such as the one used in this study have great potential for clinical application. In this study, the rate of exhibiting any type of aggression was higher than the rate of exhibiting aggression against other people for each of the three levels of estimated risk. For residents' ratings, the rate of any aggression versus aggression against other people was 34.8 vs. 10.9% for low level of risk, 60.9 vs. 39.1% for moderate level , and 90.5 vs. 76.2% for high level. Therefore, the rate of aggression against other people was usually overpredicted. This finding is compatible with that in the study of McNiel et al. (1991) [14]. The overprediction in this study was likely due to the following factors : 1) statistical problems of predicting low base rate events ; 2) the different human costs of underestimating rather than overestimating aggression risk ; and, most importantly, 3) the fact that when a clinician concludes that a patient has a high risk of aggression, the clinician has a responsibility to intervene to prevent the expected aggression from occurring. To the degree that such interventions are effective, the original prediction will appear to be a false positive [21]. That is, although the clinical assessments of risk identified patients who actually had a high potential for aggression, intervention in these cases was also responsible for the prevention of physical aggression against other people by these patients.

The overprediction of exhibiting aggression against other people in this study was smaller than in the study of McNeil et al., especially for patients with a high level of estimated risk. For example, for a high level of risk, the observed rate for physicians' ratings in our study was 76.2% compared with 22.2% in the study of McNeil et al.. For nurses' ratings, the observed rate for a high level of risk was 69.0% in our study compared with 40.0% in the study of McNiel et al.[14]. Possible explanations for these discrepancies include : 1) less effective intervention by our staff to prevent the occurrence of violent behavior in patients with a high level of risk ; 2) the longer interval of observation during which aggression could occur in the present study (the duration of hospitalization, mean 33 days versus the first week of hospitalization in the study of McNeil et al.) [14] ; 3) the influence of other confounding factors associated with the accuracy of risk assessment[21], including difference in psychiatric diagnoses among patients, whether family members are allowed to accompany patients during hospitalization , and number of previous hospitalizations. The prevalence of various psychiatric diagnoses in this study was different from that of McNeil et al., with 53 (47.7%) of our patients having schizophrenia compared to 42

(28%) of the patients in the study of McNiel et al. [14]. In addition, Volavka et al (1997) [22] analyzed the history of aggressive behavior in a sample of 1017 patients with schizophrenia recruited from centers in 10 countries and found that while the rate of violence in the entire cohort was 20.6%, the rate among developing countries (31.5%) was three times higher than in developed countries (10.5%). Thus, the relatively developed status of America compared to Taiwan may have also played a role in the comparatively higher rate of physical attacks in the Taiwanese cohort of this study (41.4% in this study versus 17.4% in McNeil et al.).

The findings of this study demonstrate the potential utility of framing assessments of aggression as probability estimates that pertain to a specific setting and a specific time frame. Through the use of such assessment, residents and nurses may be able to obtain information about the risk of aggressive behavior which could help them in determining what interventions are warranted.

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