Undiagnosed Medical Conditions and Medication Side Effects Presenting as Behavioral/Psychiatric Problems in People With Developmental Disabilities

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Preliminary data are presented on the effects of undiagnosed medical conditions and side effects of medication appearing in a subset of 209 people with mental retardation serially referred for psychiatric and behavioral treatment. A retrospective analysis of medical record data showed that 12% of the group had unrecognized medical conditions that accounted for presenting behaviors, while side effects of medication accounted for behavioral symptoms in another 7%. Analyses of diagnostic information revealed that referral physicians tended to give psychiatric diagnoses when more types of behavior problems were reported, but overall, gave fewer diagnoses than a specialized transdisciplinary team. Careful medical evaluation could have led to earlier diagnosis and treatment for people whose behavioral symptoms were associated with unrecognized medical conditions and medication side effects. A transdisciplinary evaluation process is recommended for people with mental retardation who exhibit behavioral symptoms.

Keywords: side effects, medication, mental retardation, developmental disabilities, intellectual disabilities, medical conditions, psychiatric diagnosis

People with mental retardation(MR) experience a full range of psychiatric illnesses [2,20] with reported prevalence rates varying widely. Large surveys of case files have found rates of about 10%.[2,13] In population studies that include a wider range of mental health and behavioral symptoms, rates as high as 40%, and sometimes, 60% have been reported.[4,15,16] The variation in these estimates is, no doubt, the result of complex interactions among methodological and subject factors. This report focuses on two such sources of variation, undiagnosed medical conditions and medication side effects, that may interfere with psychiatric diagnosis and effective treatment. These phenomena have received only scant attention in the general literature on psychiatric treatment [8,23] and in the literature on people with MR.[10,18,17]

Undetected medical conditions have been thought to cause psychiatric symptoms in some people with MR, and may contribute to psychiatric symptoms in a large number. This phenomenon may be more frequent in people with MR since they have more complex health care needs compared to those of the same age and sex in the general population.[4,21] In addition, people with MR have numerous barriers to effective health care services which can further compromise their health. Finally, although psychiatric diagnosis and treatment standards are beginning to be developed for

people with MR, [14] there remains significant variation in the quality of psychiatric services available to this group.[16,18,19] This article presents preliminary data suggesting that some behavioral symptoms in some people with MR, when they are referred for psychiatric evaluation, may represent manifestations of underlying, undiagnosed medical conditions.

Similarly, side effects of medication are known to cause behavioral and psychiatric symptoms in the general population. [3,5,12] Studies in this area also suggest that people with MR exhibit behavioral side effects of medication treatment.[1,7,9,17] For example, in a study of the use of carbamazepine among people with MR, adverse behavioral outcomes were associated with a previous psychiatric disorder.[7] In another study, twice as many children with global delay or intellectual disabilities, compared to non-disabled children, were found to experience significant side effects from anticonvulsants. [9] Remarkably, the relationships between undiagnosed medical conditions or medication side effects and psychiatric and behavioral disorders has been rarely studied in people with MR and related developmental disabilities.

Method

Subjects for this study were drawn from 209 patients with MR serially referred over a 30-month period to a transdisciplinary evaluation and treatment team specializing in developmental disabilities in northern New Jersey. The geographic distribution of patients included the northern two-thirds of the state. About half of the patients were living in community residential programs operated by non-profit agencies under contract with the state. The remainder of the patients lived at home. Many patients were referred as a matter of last recourse, having failed to benefit from previous behavioral and/or psychiatric treatments.

The evaluation and treatment team consisted of nurse practitioners, primary care physicians (internal medicine or pediatrics), a psychiatrist, a social worker, and a behavioral specialist. Patients referred for evaluation underwent a brief administrative intake procedure before being evaluated by the nurse practitioners and physicians. A comprehensive review of historical data was followed by a complete physical examination and appropriate laboratory testing according to clinical judgment. Additional medical follow-up was scheduled as needed. This included EEGs, radiological procedures, and sub-specialty medical consultations when indicated. Review of behavioral data and previous behavioral treatment programs was conducted by the behavioral specialist. The social worker participated by collecting family information for those patients whose families were involved in the referral process. Following this evaluation, patients were seen by the psychiatrist. Psychiatric diagnoses were made using DSM criteria, taking into account the patients' cognitive level and adaptive functioning. [10] A comprehensive treatment program was then developed and implemented.

The diagnostic process was often modified depending on the intensity and complexity of the behavioral complaint. For example, in cases where there was a significant risk of physical harm or property destruction, the diagnostic process was often abbreviated in favor of early treatment. It should be noted that the entire evaluation process was almost always accomplished in an outpatient setting while the patients were maintained in their current living arrangements.

Data for this study were collected retrospectively from medical records based on intake logs. Patient intake information and initial medical, behavioral and psychiatric evaluations were used to identify the following variables: (1) psychiatric diagnosis at intake; (2) psychiatric diagnosis following transdisciplinary evaluation; (3) medical conditions; (4) current medications; and (5) behavior problems. Subject identifications were made as part of a larger study and independently verified by a primary care physician, a psychiatrist and a nurse practitioner. Disagreements in variable codes between clinicians were encountered in only 7 (3.3%) of the original 209 cases. These cases were reviewed and agreement was reached.

Behavior ratings included the type and severity of behavior problems. Six types of behavior problems were defined: (1) self injurious, (2) aggressive, (3) destructive, (4) attention-seeking /disruptive, (5) inappropriate habits/mannerisms, and (6) others. Severity was measured by rating 58 behavioral descriptions from the above types on a 5-point scale ranging from 1.0 for non-disruptive mannerisms and habits, to 5.0 for violent behavior toward self or others.

Correlation coefficients were computed for age, sex, level of MR, types of behavior problems, severity of behavior, and whether a psychiatric diagnosis was made at either referral or following the evaluation. Further, since the study was carried out on the process of making a psychiatric diagnosis in people with MR residing in the community, factors relating to both referral diagnosis (called "referral diagnosis" here) and diagnosis following transdisciplinary evaluation ("team diagnosis") were analyzed. Analyses of variance were conducted to identify factors underlying the diagnostic process in both settings.

Results

Thirty-nine people with MR (19%) were found to have either undiagnosed medical conditions associated with their psychiatric symptoms (12%), or medication side effects (7%) that contributed to the referral complaints. Their mean age was 34.2 years (SD=11.4) with 21 females (54%) and 18 males (46%). All levels of MR were represented in the selected group. A oneway analysis of variance on level of retardation with age as the dependent variable revealed that patients with severe or profound MR were significantly younger than those with mild or moderate MR ($F = 5.33$, $df=2,36$, $p < .01$; severe-profound = 26.7 years, mild and moderate = 37.7 years). Undiagnosed medical conditions and medication side effects that accounted for original presenting symptoms are summarized in Table 1.

Insert Table 1 About Here

Overall, undiagnosed medical conditions accounting for the behavioral presentation were noted in 25 patients. Of all organ systems, central nervous system disorders were the most commonly unrecognized. In particular, a new diagnosis of epilepsy was made in 8 (32%) patients. Other newly diagnosed conditions include metabolic disorders, cardiac disorders, and hearing deficits. Unrecognized medication side effects accounting for behavioral complaints were found in 14 patients.

The most common medication side effects were related to treatment with high potency neuroleptic medication and included akathisia and extrapyramidal side effects (see Table 2).

Insert Table 2 About Here

Further analyses were conducted to determine differences in patterns of psychiatric diagnosis between general community practitioners and the specialized team. Initially, statistical comparisons on all variables between the undiagnosed medical conditions group and the medication side effects group were made and found to be not significant, therefore data in all subsequent analyses were pooled. Only 14 patients (36%) were initially referred with *any* psychiatric diagnosis. Following the transdisciplinary evaluation, however, 33 (85%) cases were assigned psychiatric diagnoses using DSM criteria, a 49% increase (Chi-Square = 3.97, $p < .05$). The mean number of behavior types reported was 4.18 (SD=1.67); with a mean severity score of 10.46 (SD=5.85), a finding consistent with the difficult referrals typically made to the team. Appropriate correlation coefficients (Pearson *r*, point biserial, phi, or eta) were calculated and are summarized in Table 3.

Insert Table 3 About Here

A number of statistically significant correlation coefficients were found in this analysis. The correlation between severity and types of behavior problems ($r = .72$, $p < .001$) suggests, not surprisingly, that individuals who present with more *types* of behavior problems tend to be those who present with the most severe problems. Of perhaps more interest is that an analysis of variance (Kruskal-Wallis oneway) revealed that significantly more patients who were either aggressive or attention-seeking/disruptive, had a psychiatric diagnosis at intake (Chi-Square = 12.23, $p = .016$). This was not the case for patients who exhibited behaviors that were less socially disruptive or self-directed (e.g., withdrawal, odd personal mannerisms, self-injurious behavior). In contrast, the only variable in the data significantly related to the diagnosis made after intake by the transdisciplinary team was age, with older patients receiving more diagnoses ($F = 6.03$, $df = 1.38$, $p < .05$; no diagnosis = 24.3 years; diagnosis made = 36 years).

Taken together these findings suggest that community practitioners more readily assign a diagnosis to patients whose behavior problems take many forms and tend to disturb others in the environment. Conversely, individuals who present fewer types of problems, especially those that tend not to disrupt the environment or disturb others, receive fewer diagnoses and, presumably, less effective treatment. The significant age effect on team diagnoses supports the hypothesis that individuals without severe behavioral symptoms are more likely to be undiagnosed despite the fact that they may have mental health disorders.

Discussion

While the results of this study are preliminary, they suggest that unrecognized medical conditions and medication side effects may significantly contribute to the prevalence of behavior disturbances in people with MR. These findings support existing literature arguing that undiagnosed medical conditions are important in psychiatric treatment for adults with MR. [7,8,18] In our own experience, we have repeatedly found undiagnosed medical problems in patients presenting for routine health care. For example, in a group of 138 patients with Down Syndrome, we found that about 20% had some form of thyroid dysfunction that was previously undetected. [6] These relationships deserve further study because they have implications for clinicians and public policy planners.

Findings in this study extend the descriptions of factors affecting psychiatric treatment in people with MR and indicate that practitioners need to carefully consider medication side effects and unrecognized medical conditions as possible etiologies.

It is well established that certain characteristics of people with MR inhibit their access to health care in general. In regard to psychiatric treatment, Sovner and Hurley, [18] for example, have suggested that organic deficits, stress, maladaptive behaviors, and limited social skills may mask or alter psychiatric symptoms. Findings about diagnostic patterns in this study extend the list of inhibiting factors to include aspects of community practitioners in addition to characteristics of the patient with MR. For example, in our sample, patients with multiple behavior problems or socially disruptive behavior tended to have received a psychiatric diagnosis and intervention of some type in the community. Furthermore, patients who did not receive a diagnosis prior to referral were found to be older.

Both of these findings suggest a unique pattern of practice among primary care physicians who treat people with MR in the community. First, psychiatric and behavioral symptoms are considered "problems" only when they impinge upon others. This result is supported by recent findings using behavior rating scales typically employed in this population. [22] The second finding on age can be seen as complementary in that it suggests that patients who are not particularly disruptive and who do not receive a diagnosis when they are young, may not be correctly diagnosed at all. A number of effects could explain these findings. For example, more disruptive behaviors may be more likely to be raised during physician visits by those accompanying patients with MR. Another explanation may well be the unfamiliarity of community practitioners with this population. These issues were not directly addressed by this investigation but warrant further study.

As expected, the analysis found a strong correlation between the type and severity of behavior. This is not surprising since, to some extent, these measures are related. Note however, that neither type nor severity of behavior were related to whether a psychiatric diagnosis was made during the transdisciplinary evaluation. This was the case for diagnoses made prior to referral, at least for type of behavior. The finding suggests that, in the community, practitioners may tend to selectively view

many different types of maladaptive behavior in one individual as indicative of psychiatric symptomatology. This may be due to diagnostic overshadowing resulting from community practitioners' limited experience with people who have MR. The outcome of this practice may be that community practitioners are prescribing psychotropic medications to manage behavioral symptoms while failing to understand the etiology of the symptoms. This phenomenon however, was not observed for diagnoses made after referral through the transdisciplinary process, suggesting that the latter diagnoses are not only related to the description of specific presenting problems, but employ the full range of symptoms and diagnostic categories in making diagnoses. It is interesting to note the lack of consistency between referral (community) and transdisciplinary (team-based) diagnosis. Given that appropriate diagnosis is the foundation for treatment, it is striking that this correlation is modest and not statistically significant (phi coefficient = .32).

Finally, findings in this study suggest that community physicians may also overlook the side effects of medication treatment. Similar observations have long been reported in the literature for children [5,9] and for people with MR. [1,7,11] It is imperative that side effects of medication be recognized in order to avoid inappropriate treatment regimes. It is not known, for example, if behavior management plans were undertaken for patients whose behaviors were essentially iatrogenic. However, this possibility is likely.

Comprehensive health care for people with MR must include medical, psychiatric, behavioral, and active care management components. A transdisciplinary, or multidisciplinary, approach to health care is able to provide comprehensive and coordinated care reflecting the unique health care needs of people with MR and associated psychiatric or behavioral problems. It is clear that primary practice physicians can play a role in psychiatric care of this group by identifying existing medical conditions prior to the commencement of psychiatric treatment. Effective strategies that integrate primary health care providers into the care of people with MR and psychiatric and/or behavioral disorders should be pursued.

Because results of this preliminary study also confirm the impression that side effects of medication play a role in behavioral and psychiatric symptoms in people with MR, community-based health care providers should exercise caution when prescribing medications for this group, especially psychotropic medications. Practitioners need to understand that many of these drugs can be associated with adverse outcomes. Given that the majority of observed medication side effects in this study were acute rather than chronic, effective behavioral monitoring could greatly reduce this problem.

This report also suggests the need for a comprehensive, transdisciplinary or multidisciplinary assessment when dealing with patients presenting with serious and frequent behavioral and emotional disorders such as the subjects in this study. As illustrated in Table 1, specific medical conditions and medication side effects may be unrecognized, thereby leading to inappropriate and ineffective treatment regimens.

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Table 1
Frequency and percents of undiagnosed medical conditions.

Undiagnosed Medical Conditions	Frequency*	%
Epilepsy	8	27
Hypothyroidism	6	19
Premenstrual Syndrome	3	10
Mitral Valve Prolapse	3	10
Thyrotoxicosis	3	10
Hearing Deficit	2	8
Aortic Insufficiency	1	3
ACTH Deficiency	1	3
Hydrocephalus	1	3
Sarcoidosis	1	3
Glucose Intolerance	1	3
Total	**30**	**99**

*several cases presented with multiple conditions/effects

Table 2
Frequency and percents of medication side effects.

Medication Side Effects	Frequency*	%
Akathisia	8	27
Extrapyramidal Effects	3	20
Tardive Dyskinesia	3	20
Dystonia	3	20
Dyskinesia	1	7
Anhedonia	1	7
Total	**19**	**101**

*several cases presented with multiple conditions/effects

Table 3
Correlation coefficients for demographic, behavioral, and diagnostic variables.

	Age	Sex	Types of Behavior	Severity of Behavior	Referral Diagnosis	Team Diagnosis	Level of MR
Age	-						
Sex	.15	-					
Types of Behavior	.03	-.32*	-				
Severity of Behavior	-.06	-.12	.72***	-			
Referral Diagnosis	.17	.16	.37**	.14	-		
Team Diagnosis	.37**	.03	.22	.15	.32	-	
Level of MR	-.36*	-.24	-.11	0	-.28	-.23	-

* $P < .05$

** $P < .01$

*** $P < .001$