Assessment of Ear Pathology in Schizophrenia

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ABSTRACT

BACKGROUND

An association between deafness and paranoid psychosis has often been reported. They are very few studies about middle ear disease being the etiological factor in some cases of schizophrenia. Also, there is opportunity to look for laterality of ear disease in schizophrenics. We wanted to study the association of ear pathology in schizophrenia and determine laterality of ear disease in schizophrenics.

METHODS

For this study 60 outdoor patients were selected of which one group contained 30 patients who were diagnosed with schizophrenia according to ICD-10. They underwent examination by ENT surgeons to look for any middle ear disease and other group of 30 patients were diagnosed as having middle ear disease by the same ENT surgeon which then were assessed for any psychotic symptoms. For rating of psychiatric symptoms, the Brief Psychiatric Rating Scale was administered. Later 3 groups were made of which first group contained subjects diagnosed with schizophrenia who had evidence of ear pathology, second group had those without any ear pathology and third group contained patients with middle ear disease who were assessed for any psychotic symptoms.

RESULTS

We found that schizophrenics with ear pathology had higher rates of paranoid psychosis as compared to those without ear pathology. Also, we found that in patients with middle ear disease, the hallucinations were restricted only to the affected ear, whereas in schizophrenics even though ear disease was unilateral, the hallucinations reported were always bilateral.

CONCLUSIONS

This study highlights the increased incidence of middle ear disease in schizophrenics and the importance of deafness in schizophrenics who do not have any ear complaints. Thus, a routine ENT examination and audiometry should be integral parts of psychiatric examination.

KEYWORDS

Ear Pathology, Schizophrenia, Audiometry, Auditory Hallucination

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BACKGROUND

Debate over hearing loss and psychopathology dates back to the time of Kraeplin.[1] Cooper et al (1976) have reviewed the association between deafness and psychiatric illness and have proposed the modes of action of long standing hearing loss in the aetiology of paranoid illness, psychological consequences of deafness, the possible contribution of sensory deprivation and the interference of hearing loss in attention, perception and communication.[2] The long interval that elapses between the onset of middle ear disease or deafness and the onset of psychosis seems to indicate that opportunities for intervention exist and hence further study is necessary in this direction.[3]

Sarlin (1963) and Altshuler (1971) found that the deaf in the New York state showed increased rates of schizophrenia (2.5%) compared to the general population (1.2%).[4,5] Pritzker (1938), Houston and Royse (1954) also reported an increased prevalence of deafness in schizophrenic and paranoid illness compared with affective disorder[6,7] and this increase has been largely confined to chronic paranoid hallucinatory psychoses which develop later in life. Sedman (1966) suggested that the disturbance of sensory input associated with hearing loss may play an etiological role in the genesis of paranoid illness.[8] Jacobson (1967) postulated that deafness creates a barrier between man and man and the misinterpretation which results from interference with verbal communication may lead to the development of projective mechanisms which are not capable of correction through environmental feedback and eventually give rise to ideas of reference and delusion of persecution. Kirk (1968) suggested that perceptual defect is central to the aetiology of paranoid illness.[9] Cooper et al (1974) suggested mechanisms of social isolation, sensory deprivation and interference with attention, perception and communication process to be relevant in schizophrenia.[2]

A study by P. R. Mason and F.E. Winton (1995) demonstrated significantly more middle ear disease in schizophrenics and proposed that middle ear disease may be an etiological factor in some cases of schizophrenia.[10] Further research has implicated the role of the temporal lobes in the neuropathology of schizophrenia.[11,12,13,14,15] and the possibility of direct irritation of the temporal lobes by middle ear disease or infection spreading intracranially through the temporal bone.[16,17] However some authors have failed to demonstrate a link between paranoid illness and deafness, notably Sjogren, Hoose and Watt.[1,17,18,19]

Thus, deafness may have an important role to play in the genesis of paranoid psychosis. The mode of action of deafness is probably one in which changes in psychological functioning and social adaptation take place slowly and progressively over a prolonged period.

Further studies exploring follow up of patients with ear disease and more detailed comparisons of schizophrenia with and without ear disease, with particularly attention to the presence of deafness are necessary. This study aims at 1) To look for association between presence of ear pathology and subgroup of schizophrenia, if any, 2) To determine the laterality of ear disease in schizophrenics and its significance, if any.

METHODS

The study was performed on 60 patients attending outpatient services or patients who were admitted in a municipal hospital. 30 patients, who were diagnosed as having schizophrenia as per ICD-10 criteria were included in the study group. For rating of psychiatric symptoms Brief psychiatric Rating Scale was administered. Patients then underwent evaluation by ENT surgeon who was blind to the diagnosis of the patient and to the fact that middle ear disease may be more prevalent in this population. Middle ear disease was considered as being present for cases of otitis media, chronic suppurative otitis media and mastoiditis and rated as absent for cases of otitis externa, wax and foreign bodies in external acoustic meatus. All patients then underwent an audiometry examination. Patients who would not co-operate for the examination were excluded from the study. The second group consisted of 30 patients who had been diagnosed as having middle ear disease by the same ENT surgeon using the same criteria and had an audiometry performed. Informed consent of the patient and a reliable relative, the demographic and other variables were assessed in both the groups.

Statistical Analysis

The data obtained from the study was subjected to statistical analysis. Subjects diagnosed as having schizophrenia who has evidence of ear pathology were designated as group A; while those without ear pathology were designated as group B. Patients with middle ear disease who were assessed for presence of hallucinations were designated as group C. For statistical analysis, Fishers Probability Test?? Chi square test with Yates correction?? and Odds ratio were employed.

RESULTS

Among Groups A and B, the subgroup of schizophrenia as per ICD 10 criteria were as follows:

	Group A	Group B
Paranoid	77.77	14.78
Hebephrenic	-	4.76
Catatonia	-	-
Undifferentiated	22.22	50.46
Table 1		

	Group A	Group B
Paranoid	7	3
Others	2	18
Table 2		
Odds Ratio: 21. Statistically significant at p <0.001		

This means that schizophrenics with ear pathology had higher rates of paranoid psychosis as compared to those without ear pathology, who were diagnosed as having

undifferentiated schizophrenia. This consistent with the findings of Cooper et al[2] who had demonstrated an excess of ear pathology in patients suffering from paranoid schizophrenia. None of the patients in group C had any psychiatric diagnosis.

88.88% (8 out of 9) patients in group A and 47.61% (10 out of 21) patients in group B had presence of auditory hallucinations. 30% (9 out of 30) patients in group C had auditory hallucinations. Thus, schizophrenic patients were 3.5 times more likely than non-schizophrenic patients to develop auditory hallucination.

	Group A + B	Group C
Present	18	9
Absent	12	21
Table 3		
Statistically significant at p <0.5. Odds ratio: 3.5		

All the patients in group A and B having hallucinations reported them to be bilateral whereas patients in group C reported hallucinations corresponding to the side of ear pathology.

Thus, in patients with middle ear disease, the hallucinations were restricted only to the affected ear, whereas in schizophrenics even though ear disease was unilateral, the hallucinations reported were always bilateral.

DISCUSSION

This study highlights the increased incidence of middle ear disease in schizophrenics and the importance of deafness in schizophrenics who do not have any ear complaints. Thus, a routine ENT examination and audiometry may be necessary as a integral part of psychiatric examination. Further study specifying the exact role of middle ear disease and deafness in schizophrenia and developing appropriate intervention strategies in the critical period between onset of ear complaints and schizophrenic symptoms may be helpful in understanding the exact nature of the disease and possibly preventing it.

CONCLUSIONS

The incidence of ear pathology (middle ear disease and deafness) is high in schizophrenics. Ear pathology is significantly higher in paranoid schizophrenics. In some schizophrenics, the symptoms of ear disease predate those of schizophrenia and there is a substantial time interval between the two. Middle ear disease rather than inner ear disease is present in schizophrenics. In individuals with middle ear disease, only hallucinations correspond to the side of ear pathology, whereas in schizophrenics, the auditory hallucinations are bilateral irrespective of the side of ear pathology.

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