

Full Length Research Paper

Profile of speech impairments in HIV- infected individuals: A preliminary study

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Infection due to Human immunodeficiency virus (HIV) can cause damage to both the central and peripheral nervous systems and result in disorders of communication. Progressive decline in speech behaviours in HIV infected individuals have been documented in Western literature (Flower and Sooy, 1987). This study aims to create a database of speech impairments seen in individuals with HIV infection to reflect the need for assessment and management of communication skills. 15 males with HIV infection between the age ranges of 18 - 40 years were included in the study. The deviant speech characteristics was profiled on the parameters in Frenchay Dysarthria Assessment. 93.3% of the participants demonstrated speech impairments which ranged across the participants. Most affected were parameters of tongue and laryngeal functions followed by reflex, respiration, lip functions and intelligibility parameters. Jaw and soft palate functions were not affected in any of the participants. It can be concluded that HIV infection results in speech impairments in the affected individuals. But this conclusion has to be generalized with caution since only 15 participants were involved in this study. Further research considering the effects of medication, opportunistic infections and disease duration is suggested.

Key words: HIV, speech disorders.

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) is a disease caused by Human immunodeficiency virus, which affects the nervous system. Infection results in damage to the functioning of both the central and peripheral nervous systems, which could lead to disorders in communication, affecting both language and speech behaviours (Flower and Sooy, 1987). Numerous studies in the West have documented progressive decline in speech behaviours in infected individuals, attributable to brain damage, from the very early stages of infection. Neuroimaging and neuropathology studies have demonstrated that the white matter, deep gray matter (basal ganglia and thalamus), and medial temporal lobe structures are vulnerable to the effects of HIV infection (Neuen-Jacob et al., 1996). Impairments of

voluntary motor activity occurring as a sign of extrapyramidal involvement preceding overt clinical signs and symptoms of motor system dysfunction in infected individuals have also been highlighted (Arendt et al., 1994). In a study by Porter and Sande (1992), fungal and bacterial opportunistic infections most often seen in these individuals, was reported to result in meningeal inflammations. In this study the HIV infected individuals were found to have multiple cranial nerve palsies, hemiparesis and ataxia. Duffy (2005) reviewed the etiologies of different motor speech disorders and reported that HIV could be considered as a possible cause for flaccid, spastic and ataxic types of dysarthrias. Swallowing disorders have also been noted in CNS pathologies. Cases of dysphonia among infected individuals have been reported but articulation is found to be not affected (Flower and Sooy, 1987). As evidenced in the above literature, there is a wealth of literature on the communication disorders, especially speech impairments, faced by individuals with HIV infection in western countries

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which helps in the assessment and the management of such individuals (Flower and Sooy, 1987).

In India the scenario is different. To begin with the enormity of the disease of HIV is still being understood. The treatment of infected individuals is restricted to their life sustenance. The communication problems in such individuals receive little attention; they are either ignored or there is lack of awareness. In all this, the HIV infected individual is placed in a disadvantageous position. The advances in the medical field are increasing the average life expectancy of such individuals; but their communication handicaps can prevent them from maintaining a productive life. The ability to maintain effective communication as long as possible is crucial to individuals with progressive disease. This is possible only with early detection and intervention of these problems.

Need for the study

The focus of the management of individuals with HIV is moving towards better life expectancy and life quality. This is possible only with a multidisciplinary approach towards treating the HIV-related manifestations. But the problems in communication, whether in language or speech domains, are often ignored areas. This is true especially for a country like India, where high incidence of the disease is seen. There have been little attempts in India to determine the effects of this disease on the individual's performance in the communication domain.

Objective of the study

To create a database of the speech impairments, an important aspect of communication, in individuals affected with HIV infection which will in turn support in evidence based practices in the assessment and management of these problems in such individuals.

METHOD

This study was carried out in a multidisciplinary tertiary care hospital in the Southern part of India.

Participants

15 males with HIV infection between the age ranges of 18 - 40 years were included in the study. All the participants were undergoing ART since the identification of the disease. They were selected and located through their physician based on willingness to participate. Written informed consent was obtained from all the participants before initiating the study.

Procedure

1. Initially, a detailed history was collected including each participant's medical and speech problems. The medical history of each client was obtained from their medical records.

2. Formal assessment of speech characteristics was done through the administration of Frenchay Dysarthria Assessment (FDA: Enderby, 1983), by the primary investigator, an experienced speech language pathologist. This assessment tool profiles the performance of individuals on specified parameters on a five point rating scale. The parameters assessed in this test are: reflex, respiration, lips, jaw, soft palate, laryngeal, tongue and intelligibility. FDA has been used for the differential description and diagnosis of adults with dysarthria.

The scores obtained on the test were used to arrive at a profile of speech impairments in HIV infected individuals.

RESULTS

The medical history, communication problems and the FDA scores obtained by all the participants with HIV infection considered in this study are as summarized in Table 1.

From Table 1, it can be understood that 93.3% of participants showed affected speech behaviours on the parameters of FDA. There is a wide range of variation in these parameters being affected across each participant. The degree to which each parameter was affected on FDA ranged from mild to moderate severity in all the participants.

The distribution of the FDA parameters affected in the participants in the study is as shown in Figure 1.

As can be seen in the graph, the parameter of tongue function (60%) was affected in maximum number of participants followed by affected laryngeal functions (46.6%). Reflex and respiration functions were affected in equal number of participants (33.3%). Similar trend was seen for lip function and intelligibility parameter, which were least affected in the participants (20%). Jaw and soft palate functions were not affected in any of the participants.

DISCUSSION

In this study speech characteristics exhibited by HIV infected individuals was focused upon. From the results it can be seen that except for one participant, all the other HIV infected individuals (93.3%) had one or more of the parameters assessed in FDA affected. Of all the parameters, the functions of tongue, larynx, reflex and respiration were affected in most of the participants, though the functioning of lips and intelligibility of speech was affected only in some participants. Some of these problems can be attributed as a sign of extra pyramidal dysfunction in the early stages of the infection. This is in consensus with reports of impairments in voluntary motor activity which can occur as a sign of extrapyramidal involvement preceding overt clinical signs and symptoms of motor system dysfunction (Arendt et al., 1994).

Also, since the functions of the jaw and soft palate were spared, it could be postulated that HIV infection could differentially affect the speech production mechanism.

Table 1. Medical histories, communication problems and FDA results.

Participant	Age/ Sex	Duration of disease	Medical problems	Communication problems	Parameters affected in FDA (grade)
P1	27 / M	5 years	-TB meningitis -generalized xerosis -papilledema	Nil	-Respiration in speech(b) -lip spreading(b) -laryngeal time(b) -laryngeal volume(b) -tongue elevation(b) -intelligibility in conversation(b)
P2	36/ M	2 years	Nil	Nil	Nil
P3	40 / M	4 years	-Rt sided pleural effusion -frequent fever -weight loss -less appetite -sleeplessness	-forgetfulness (episodic- since 7 months)	- tongue at rest(b)
P4	40 / M	1 year	-immuno compromised pathological fracture of Rt Meta carpel joint -inguinal hernia -TB meningitis	-vocal fatigue -water needed during meals -choking sensation for fluids (sometimes)	-swallow reflex(b) -respiration in speech(c) -laryngeal time(b) -laryngeal volume(c)
P5	32 / M	5 years	-pleural effusion -gastroenteritis -less appetite -neck pain	Nil	-tongue elevation(b)
P6	40 / M	10 years	-inguinal hernia -chronic cough -mild hepatomegaly -muscular weakness	-dyskinetic movements of lips (on medication) -frequent throat clearing	-lip spread(b) -tongue at rest(b)
P7	30 / M	1 year	-malaria -jaundice -frequent belching after food	-frequent throat clearing	-tongue at rest(b)
P8	38 / M	1 year	-TB meningitis -episode of complete partial seizures -Lt basal ganglia involvement -sensory motor peripheral Neuropathy -oral candidiasis	-frequent throat clearing	-tongue at rest(b) -tongue protrusion(c) -tongue elevation(b) -tongue lateral(b)
P9	34/ M	3 years	-TB meningitis	-difficulty in swallowing	-swallow reflex(b) -tongue protrusion(b) -tongue lateral(b)

Table 1 Contd.

P10	33/M	1 year	-frequent cold and fever -lymphadenopathy -hepatomegaly	Nil	-cough reflex(b) -respiration in speech(d) -laryngeal time(c) -laryngeal volume(c) -tongue protrusion(d) -tongue elevation(b) -intelligibility in sentence(b)
P11	36/M	2.6 years	-less appetite -frequent cold and cough -gastritis -Lymphoma in neck	-hearing loss	-lip at rest(d) -lip elevation(b) -lip pursing(c) -lip spread(c)
P12	36/M	4 years	-seizures(multiple episodes) -sleeplessness -abnormal gait -right hemiparesis -calcified tuberculum	-frequent throat clearing. -loss of memory	-respiration in speech(b) -laryngeal time(b) -laryngeal volume(b)
P13	30/M	2 years	-decreased weight -frequent fever -pleural effusion -hepatospleeno-megaly -lymphadenopathy	-shortness of breath on exertion	-laryngeal volume(b) -laryngeal time(b)
P14	20/M	1 year	-TB meningitis -frequent fever -anaemia	-difficulty in swallowing -fatigue while speaking	-swallow reflex(b) -respiration at rest(b) -respiration in speech(b) -laryngeal time(b) -laryngeal pitch(b) -laryngeal volume(b) -intelligibility in conversation(b)
P15	35/M	2 years	-frequent cold -decreased appetite -TB pulmonary -TB meningitis -toxoplasmosis -hepatomegaly	-irritation while swallowing	-swallow reflex(b) -cough reflex(b) -laryngeal time(b) -laryngeal volume(b) -tongue at rest(b) -tongue protrusion(b) -tongue elevation(b)

Note: 'b'- mildly affected; 'c'- moderately affected.

It is understood that participants who had a history of meningitis showed more deviant speech characteristics. Meningitis is found to cause impairments in functioning of cranial nerves which are responsible for mediating the inflammations. Another reason for this finding could be the side effects of medications that these individuals consume, on the nervous system. But this aspect needs further research.

On observation of the dysarthric errors of the participants, it can be understood that no participant exhibited a specific pattern or cluster of symptoms in favour of a particular type of dysarthria. Thus, no conclusion can be made in this regard.

actions of the muscles of the speech organs. This is in coherence with the study done by Porter and Sande (1992), who reported the presence of multiple cranial nerve palsies in HIV infected individuals with meningeal

Another interesting finding is that there seems to be no correlation between the duration of the HIV infection and the deviant speech behaviours observed in the participants. There were instances where individuals with 1 year of duration of infection had more speech deviancies than those with longer durations of the disease. In this preliminary study it is difficult to attribute a reason for this finding.

It can also be noted that none of the participants were

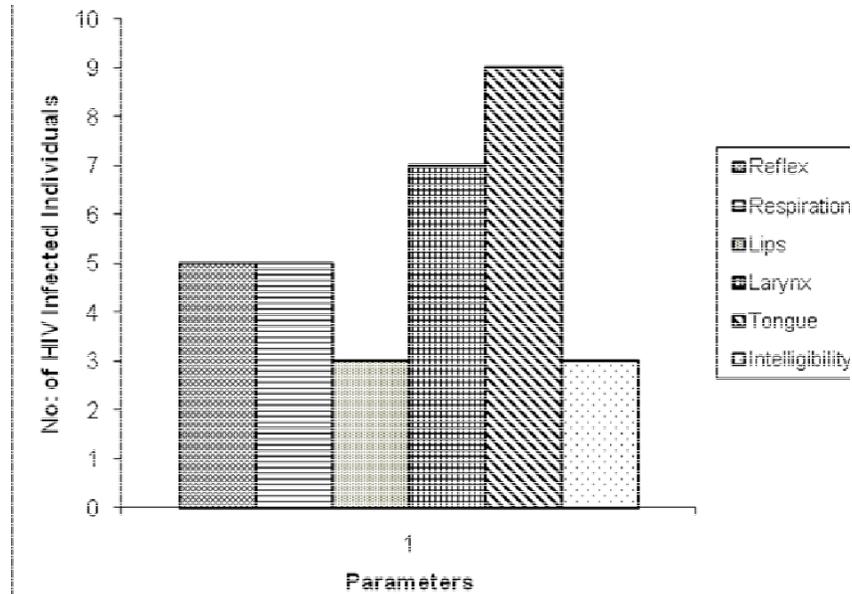


Figure 1. Affected parameters on FDA.

aware of the impairments observed in their speech behaviour. This could be because HIV infected individuals are afflicted by a variety of physical and psychological ailments which consumes their own attention as well as that of the medical professionals involved in their treatment. As a result there is a tendency to ignore the communication problems seen in such individuals. But the results of this study substantiate the need for communication assessment and subsequent management as a consequence of HIV infection.

Conclusion

In this study, an attempt was made to profile speech impairments seen in individuals with HIV infection. 15 male participants between the age ranges of 20 to 40 years were considered. Frenchay Dysarthria Assessment was administered and the results indicated that the parameters of tongue and laryngeal functions were affected in most of the individuals followed by reflex and respiratory functions. Least affected were lip function and intelligibility parameter. This supports the assumption that HIV infected individuals are faced with speech impairments during their life span. This finding should be further substantiated by including more number of participants. This study also throws light on the importance of communication profiling in the treatment of such individuals. The need for further research on the communication impairments seen in HIV infected individuals, considering the effects of medication, opportunistic infections and disease duration is recommended.

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