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FOREIGN ACCENT SYNDROME: A LANGUAGE CHANGING DISORDER

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ABSTRACT

Foreign accent syndrome (FAS) is a speech disorder of abrupt onset in which the affected person's spoken output is altered such that it is perceived to have the quality of a foreign accent. It is a rare phenomenon. More than 100 cases with the syndrome have been published, the majority of which were associated with observed insults of speech centre. Some other cases have been described without identifiable organic brain injury, especially in patients with psychiatric illness. FAS is most often caused by damage to the brain caused by a stroke or traumatic brain injury. This disorder is also known as Pseudo-Accent and it was first seen in 1940. Foreign accent syndrome is diagnosed more in females as compared to males. This disorder is mainly seen in age range of about 25-49 years. Foreign accent syndrome is a medical condition in which patients develop speech patterns that are perceived as a foreign accent that is different from their native accent. It may also affect the psychological behaviour of patient. The main mechanism of this disease is still not known. This topic is discussed in the context of a brief review of the syndrome. The diagnosis of FAS is blood tests, to test for infections and some illnesses. Many causes of foreign accent syndrome are not curable, though medication can help manage the symptoms. Here we know about the

symptoms, diagnosis, causes, treatment and mental health condition of the foreign accent syndrome. This review may improve the diagnosis of the syndrome in clinical practice and highlights the importance of recognizing psychogenic FAS as an independent taxonomic entity.

Keywords: Foreign accent syndrome, neurological disorder, psychiatric illness, speech disorder

INTRODUCTION

It has now been over a century that researchers have reported on a motor speech disorder most frequently referred to as “Foreign Accent Syndrome” (FAS). Foreign Accent Syndrome is a rare phenomenon where speech is characterized by a new accent to the patient's native language. Foreign accent syndrome is majorly seen in brain. Around 200 cases have been reported still now. Most of the cases are found in the year 1907-2014. In the case of FAS, only some cases are assumed with psychogenic have been reported. The first patient with FAS was anecdotally described by Marie (1907). The term “FAS” was later coined by Whitaker (1982). Sir Whitaker also proposed the diagnosis of this criteria: “the accent is considered by the patient, by acquaintances and by the investigator, to sound foreign”; “it is unlike the patient’s native dialect before cerebral insult”, “it is clearly related to central nervous system damage (as opposed to a hysteric reaction, if such exist)”; “(t)here is no evidence in the patient’s background of being a speaker of a foreign language (i.e., this is not like cases of polyglot aphasia)”.

This new accent is foreign to both the speaker and the listener. Is important to note that the affected patient may never have lived in the Country of origin of the new accent. The patient presented here had a known schizophrenia and psychogenic FAS, a combination for which only few cases have been reported to date in the medical literature [1-3].

Definition

Foreign Accent Syndrome (FAS) is a rare medical condition in which a person suddenly starts speaking with a foreign accent that is perceived as different from their native accent, often without having been exposed to the foreign language extensively. This phenomenon typically follows a neurological event such as a stroke, head injury, or other brain trauma. It can also be associated with certain psychiatric or developmental conditions. The foreign accent may be consistent with a specific language or may not correspond clearly to any identifiable accent.

Foreign Accent Syndrome is a rare condition where speech is characterized by a new accent to the patient's native language.

This new accent is foreign to both the speaker and the listener. It is important to note that the affected patient may never have lived in the country of origin of the new accent. There is evidence from the medical literature to suggest that there are three main types of FAS: neurogenic, psychogenic, and mixed. Each of these variants has unique characteristics. There has been an increase in the number of reported FAS cases especially of the neurogenic variety. The patient presented here had a known schizophrenia and psychogenic FAS, a combination for which only few cases have been reported to date in the medical literature [4-6].

Pathogenesis of foreign accent syndrome

The pathogenesis of Foreign Accent Syndrome (FAS) involves complex interactions between various regions of the brain responsible for speech production and language processing. Here's a detailed breakdown of the mechanisms believed to be involved:

Neurological Basis

1. Brain Injury or Trauma:

- **Stroke:** The most common cause of FAS, often affecting the left hemisphere of the brain, particularly areas like Broca's area, which is critical for speech production.

- **Head Injury:** Traumatic brain injuries can disrupt normal speech patterns by damaging neural networks.

- **Brain Lesions:** Tumours, aneurysms, or infections can lead to localized brain damage, affecting speech.

2. Affected Brain Regions:

- **Broca's Area:** Located in the frontal lobe, crucial for motor aspects of speech.
- **Motor Cortex:** Controls the muscles involved in speech production.
- **Basal Ganglia:** Involved in motor control and learning, influencing speech rhythm and intonation.
- **Cerebellum:** Contributes to coordination and timing of speech movements.

Pathophysiological Mechanisms

1. Motor Speech Control:

- Damage to areas controlling motor functions of speech can alter the precise movements required for producing sounds characteristic of a person's native accent.
- Disruptions can cause changes in prosody, including stress, rhythm, and intonation, leading to an accent perceived as foreign.

2. Phonetic and Phonological Processing:

- The brain's ability to plan and execute phonetic sequences is impaired, resulting in atypical pronunciation patterns.
- Changes in how the brain processes and integrates phonological information may lead to consistent production of sounds that resemble a foreign accent.

3. Neurological Reorganization:

- After injury, the brain may undergo reorganization as it attempts to recover lost functions.
- This reorganization can lead to altered neural pathways for speech, producing unexpected changes in accent.

Additional Factors

1. Psychogenic Factors:

- In some cases, FAS may be influenced by psychological conditions, such as conversion disorder, where psychological stress manifests as physical symptoms.
- These cases are less common and typically diagnosed after ruling out organic causes.

2. Genetic and Developmental Factors:

- Although rare, there may be underlying genetic predispositions or

developmental anomalies that contribute to the manifestation of FAS.

Understanding the pathogenesis of FAS is essential for developing targeted therapies and rehabilitation strategies to help affected individuals regain their native speech patterns.

Prevalence

Foreign Accent Syndrome (FAS) is an extremely rare condition, with fewer than 100 cases documented in medical literature since it was first described in 1907. Due to its rarity, precise prevalence rates are difficult to establish. Here are some key points regarding the prevalence of FAS:

- ✓ **Rarity:** The condition is so rare that it is considered a medical oddity. Most neurologists and speech-language pathologists will never encounter a case in their careers.
- ✓ **Reported Cases:** The majority of documented cases have occurred following a stroke or traumatic brain injury, although there are also instances related to other neurological conditions such as multiple sclerosis and certain psychiatric disorders.
- ✓ **Geographical Distribution:** Cases have been reported worldwide, indicating that FAS is not limited to any specific population or region. The

condition appears to affect people of various ages, ethnicities, and linguistic backgrounds.

- ✓ **Gender and Age:** There is no strong evidence to suggest a significant gender or age predisposition, although some studies suggest that it may be slightly more common in females. The age of onset typically corresponds with the timing of the neurological event, often in middle to older age due to the higher incidence of strokes and other neurological conditions in these age groups.
- ✓ **Underreporting:** The true prevalence may be underreported due to a lack of awareness among healthcare professionals and the general public. Misdiagnosis or failure to report mild or transient cases might also contribute to the perceived rarity.

Given these points, while the precise prevalence of Foreign Accent Syndrome remains unknown, it is acknowledged as an exceptionally rare condition with only a small number of cases reported globally.

Mechanism of action

The mechanism of action of Foreign Accent Syndrome (FAS) involves complex neurological and neurophysiological

processes that result in altered speech patterns perceived as a foreign accent.

- There is no exact mechanism of action for this syndrome.
- If the patient is suffering from the accidents and hurt to the part of the brain, usually Broca's area which controls the melody of speech and rhythm of your words [7, 8].

Etiology

- Foreign accent syndrome usually results from a stroke, but can also develop from Head trauma, migraines or developmental problems.
- The condition might occur due to lesions in the speech production network of the brain, or may also be considered a neuropsychiatric condition [9, 10].

Symptoms of foreign accent syndrome

- The patient moves their tongue or jaw differently while speaking, it has been identified by Research that there are specific parts of the brain which are affected.
- The affected part of the brain are associated with controlling with individuals linguistics.
- The damage in most cases can alter different speech patterns in addition to the Adaptation of foreign accents.

- The patient moves their tongue or jaw differently while speaking, which creates a different sound, So a recording of the speech pattern is done in order to analyze it.
- Voicing errors (i.e. Bike for pike) Trouble with Consonant clusters.
- Symptoms of either type of FAS can include:
 - Talking more slowly or with varying speeds.
 - More or longer pauses mid-word or mid-sentence.
 - Drawing out certain sounds longer than necessary.
 - Talking speed.
 - Pitch and tone.
 - Articulation (how precisely you form sounds).
 - Stressing of syllables (which syllables you emphasize vs. Which you don't).
 - Length of sounds [11-14].
- ii. Customized speech therapy sessions aimed at improving articulation, prosody (rhythm, stress, and intonation), and overall intelligibility. Techniques may include:
 - iii. Targeting specific sounds or phonemes to improve pronunciation.
 - iv. Working on the melody, rhythm, and stress patterns of speech to align more closely with the individual's native accent.
 - v. Teaching the correct placement of the tongue, lips, and other articulators to produce native sounds.
 - vi. Using visual and auditory feedback tools to help patients adjust their speech patterns in real-time.
 - vii. Programs and applications designed to provide practice and feedback on speech production.
 - viii. Treatment should be developed on a patient by patient basis. About a Quarter of FAS patients go through remission after treatment.
 - ix. The time period of this disorder varies from person to person. For some it may last for months or years, while for others the effects may be permanent.
 - x. In some cases, medications might be used to manage underlying conditions contributing to FAS, such as

Treatment of foregin accent syndrome

- i. Treatment involves intense speech therapy. Methods such as oromotor exercises, using mirrors, targeting phonetic awareness, reading lists and texts, and using electropalatography are all methods that have been used in the past.

- anticonvulsants for epilepsy or medication for managing psychiatric conditions.
- xi. Participation in support groups for individuals with FAS or other speech disorders can provide emotional support and practical advice.
 - xii. Innovative therapies, such as virtual reality or immersive language experiences, are being explored as potential treatment options for FAS.
 - xiii. Treatment for FAS is highly individualized, and what works for one person may not work for another. A comprehensive, patient-centered approach that addresses both the speech symptoms and any underlying conditions offers the best chance for improvement [15, 16].

Diagnosis

Foreign accent syndrome has no specific test for its diagnosis. It is mainly identified, when person himself or other person noticed the change in the accent of the patient. To identify the cause of the syndrome, doctors take some test that are;

- No specific test can assess for foreign accent syndrome.
- Instead, doctors work to diagnose the cause using a variety of tests, including:

- Blood tests, to test for infections and some illnesses.
- Brain scans, such as MRI scans, to look for lesions or damage in the brain.
- Positron emission tomography (PET) scan
- Electroencephalogram (EEG)
- Neurological exam
- Cognitive testing
- Neuropsychological testing
- A lumbar puncture, mainly done for seeing the infection in spinal fluid and also analyze the other nervous system disorder [5, 17].

Prevention

FAS happens unpredictably, and it's extremely rare. Because of that, there aren't any clear ways to prevent it or reduce your risk. You can reduce your risk in general by avoiding some of the most common causes of structural FAS. These include:

- ✓ **Wear safety equipment.** Head injuries are one of the most common causes of FAS. Using safety equipment can help you avoid injuries that might cause FAS. Examples include helmets and seat belts (or other vehicle safety restraints).
- ✓ **Manage health conditions.** Conditions that can increase your risk of stroke are often manageable.

Examples include migraines, Type 2 diabetes and high blood pressure (hypertension).

- ✓ **Reach and maintain a weight that's healthy for you.** You can reduce your risk of having a stroke or limit the severity of one by taking care with what you eat and how active you are. These can't completely prevent conditions that could cause FAS, but even small changes may help.

Complications

FAS can have major impacts on a person's mental health. Depression and anxiety are much more likely to happen. That can be due to any of the following:

- Skepticism from family, friends or loved ones who question whether the condition and the symptoms are genuine.
- Difficulty getting a diagnosis because this condition is so rare, which means healthcare providers may not consider it or may misdiagnose it as another condition.
- Fears about negative reactions from others, such as ridicule or bullying.
- Anxiety about being misunderstood when trying to communicate [5, 18].

New approaches

Advancing the understanding and treatment of Foreign Accent Syndrome (FAS) requires innovative approaches across diagnosis, therapy, research, and support systems. Here are some new and emerging approaches that show promise:

Diagnostic Innovations

1. Advanced Neuroimaging Techniques:

- a. **Functional MRI (fMRI):** Used to observe brain activity during speech tasks, helping to identify specific regions involved in FAS.
- b. **Diffusion Tensor Imaging (DTI):** Assesses the integrity of white matter tracts to understand the connectivity issues contributing to FAS.

2. AI and Machine Learning:

- a. **Automated Speech Analysis:** AI algorithms can analyze speech patterns to detect subtle changes and provide more objective and precise diagnoses.
- b. **Predictive Modeling:** Machine learning can help predict the onset and progression of FAS based on patient data, improving early detection.

3. Comprehensive Diagnostic Tools:

- a. Development of standardized diagnostic protocols incorporating neuroimaging, speech analysis, and

neuropsychological assessments to streamline and improve the accuracy of diagnosis.

Therapeutic Innovations

1. Personalized Speech Therapy:

a. **AI-Driven Therapy Programs:** AI can tailor speech exercises to the individual's specific needs, providing real-time feedback and adjusting difficulty levels dynamically.

b. **Virtual Reality (VR) and Augmented Reality (AR):** Creating immersive environments where patients can practice speech in simulated real-world scenarios, enhancing engagement and effectiveness.

2. Neuromodulation Techniques:

a. **Transcranial Magnetic Stimulation (TMS):** Non-invasive brain stimulation technique that can enhance neural plasticity and improve speech outcomes.

b. **Transcranial Direct Current Stimulation (tDCS):** Delivers low electrical currents to the brain to modulate neuronal activity and promote recovery of normal speech patterns.

3. Integrative Therapy Approaches:

Combining speech therapy with other rehabilitation modalities such as physical therapy, occupational therapy, and cognitive behavioral therapy to address the holistic needs of the patient.

Research Innovations

1. Genetic and Molecular Research:

Investigating potential genetic predispositions and molecular pathways involved in FAS to identify biomarkers and novel therapeutic targets.

2. Longitudinal and Multicenter Studies:

Conducting large-scale, longitudinal studies across multiple centers to gather comprehensive data on FAS, facilitating a better understanding of its natural history and treatment outcomes.

3. Patient Registries and Databases:

Establishing international registries to collect and share data on FAS cases, promoting collaboration and knowledge sharing among researchers and clinicians globally.

Support and Awareness Innovations

1. Telehealth and Online Support:

a. Leveraging telehealth platforms to provide remote speech therapy and counseling services, making specialized care more accessible to patients regardless of their location.

- b. Online support groups and forums where patients can connect, share experiences, and receive emotional support.

2. Public Awareness Campaigns:

- a. Educating the public about FAS through social media, documentaries, and public speaking events to reduce stigma and increase understanding of the condition.
- b. Training healthcare professionals to recognize and manage FAS, ensuring timely and accurate diagnosis and referral.

3. Advocacy and Policy Initiatives:

Advocating for better insurance coverage and healthcare policies that support research funding and access to treatment for rare conditions like FAS.

Future directions

Addressing these challenges will require concerted efforts in raising awareness, improving diagnostic and treatment protocols, fostering multidisciplinary collaboration, and supporting comprehensive research initiatives. Developing international research networks and case registries can also facilitate better understanding and management of FAS. Future directions for FAS involve a multidisciplinary and multifaceted approach, leveraging advancements in technology,

research, and healthcare practices to improve the lives of those affected by this rare condition. By focusing on these key areas, the medical community can enhance the understanding, diagnosis, and treatment of FAS, ultimately leading to better patient outcomes and quality of life.

Holistic patient care:

- Developing patient-centered care models that address not only the speech symptoms but also the psychological, social, and emotional aspects of living with FAS.
- Incorporating family and community support systems into treatment plans to provide comprehensive care.

Innovative therapeutic devices:

- Designing wearable devices that provide continuous feedback and monitoring of speech patterns, helping patients practice and improve their speech in daily life.

Cross-disciplinary collaboration:

- Fostering collaboration between neurologists, speech-language pathologists, psychologists, geneticists, and other specialists to develop a multidisciplinary approach to FAS research and treatment.

By embracing these new approaches, the medical community can

improve the diagnosis, treatment, and overall management of Foreign Accent Syndrome, ultimately enhancing the quality of life for those affected by this rare condition.

CONCLUSION

Foreign accent syndrome is a rare disease especially in India, such disease might occur from previous injury somewhere in head and some of other reason that might not known and in case studies, it was just seen that the patients were diagnosed with minor brain injuries that leads to such disease. From this article we mainly want to highlight the disease which is rare but moreover, it is not completely treatable. So, by this article we want to let the people know about this disease. This disease might be a great challenge for its further studies for the researchers. Foreign Accent Syndrome (FAS) is still a rare and poorly understood condition, especially the psychogenic variety. While there is substantial literature discussing neurogenic FAS, research is still required to better understand the mechanisms of psychogenic FAS and the relationship between FAS and schizophrenia. Prosody with emphasis on intonation was the major FAS problem with our patient.

In conclusion, Foreign Accent Syndrome (FAS) is a rare and intriguing neurological condition characterized by the sudden onset of altered speech patterns

perceived as a foreign accent. While FAS remains poorly understood, significant progress has been made in elucidating its underlying mechanisms, diagnosing affected individuals, and developing therapeutic interventions. FAS presents a complex interplay of neurological, psychological, and potentially genetic factors, leading to disruptions in speech production, articulation, and prosody. Neurological insults such as stroke, traumatic brain injury, and brain tumours are commonly associated with FAS, although psychogenic and idiopathic cases also occur.

Future research should work toward validation of a set of criteria for psychogenic FAS via an extensive comparison with the neurogenic cognate. Moreover, in view of an efficient therapeutic guidance and clinical diagnosis, future research should focus on the treatment of non-organic speech and language disorders in large populations.

Author contributions

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None declared.

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