SPEECH PRODUCTION EVALUTION

NAME: AS
DOB: February 11, 1964
DATE SEEN: September 23, 2021
DATE OF REPORT: November 3, 2021

History

The patient background history was obtained through a combination of self-report and a case history review from a neurological visit and an MRI. AS is a 55-year-old male with anxiety, cerebral atrophy and a history of alcohol use and continuing marijuana use. The patient's presenting concern is ataxic dysarthria and possible multiple system atrophy. He reports staying active and discontinuation of alcohol. However, he experiences dizziness when moving his head quickly and although he has not fell, his gait is slow and careful. When tired AS experiences slurred speech and he reports worsening handwriting and trouble typing. The client visited an ENT and cardiologist whose reports were both within normal limits. There is a family history of paternal tremors, diabetes, stroke, and heart disease as well as maternal Parkinson disease. It was reported that a grandparent also had tremors, diabetes, and heart disease.

AS was seen at the movement clinic on January 23, 2020 by Dr. Morgan for a follow-up exam regarding his dysarthria, dizziness, and writing difficulty. The report showed a fairly normal neurological exam. It was reported that AS's gait is normal, however his balance is slightly impaired. An intention tremor was observed and labs were ordered in regard to a potential neurodegenerative disease.

On May 7, 2019 AS had a brain MRI without contrast, which was examined by Dr. Gilbert. The exam showed advanced cerebellar volume loss, which may be caused by alcohol use, certain medications or some neurodegenerative diseases. Mildly advanced supratentorial volume loss was also reported.

Communication Effectiveness

Overall, AS's communication seems to be mildly impaired due to dysarthria. He was observed to have a hard time with articulation resulting in slurred speech, but all other aspects of speech were normal. As a listener it is sometimes difficult to pick up on the end of one word and the beginning of the next, causing some misunderstanding. On the Communication Effectiveness survey AS stated that he has a harder time communicating with a stranger over the phone than someone he is familiar with. Additionally, he reported having a harder time communicating in a noisy environment or from farther away. AS received a score of 15 on the Communicative Participation Item Bank (CPIB). This survey displayed much more interference in conversation with a stranger in comparison to someone the client knows. Difficulty in small groups, speaking quickly and in persuasive conversation was also mentioned.

The dysarthria Impact Profile provides information regarding how the client feels about himself and his speech disorder as well as how his speech impacts his life. In regards to how dysarthria has

affected AS as a person, he reported a decrease in confidence, as well as feeling self-conscious due to his speech. In addition, his speech makes him feel as though he has less control of his life. Regarding AS's acceptance of his dysarthria, he stated that he is not at all happy with his current speech, however he is willing to admit he is having issues and finds value in his other qualities. In relation to how the client thinks other people respond to his speech, it was recounted that he cares about and is conscious of others reactions. He also said that people sometimes think he has been drinking even though he hasn't, however most people make an effort to understand his speech. Finally, when it came to how dysarthria affects his communication with others, AS reported an impact on his social life. He states that he avoids using the phone and talking when tired. The client's main concerns are progression of his multiple system atrophy (MSA), imbalance, overactive bladder, and trouble playing golf.

Oral-Mechanism Examination

An oral mechanism exam was performed via a telehealth video session, resulting in some missing information regarding oral structure strength. AS's oral facial features and mechanisms were all within normal limits, his facial anatomy was symmetrical, and he has all of his teeth. In addition, his mouth movement and function were also within normal limits.

Swallowing

AS reported that his swallowing is normal and he is having no current issues.

Phonation

Voice Quality: Voice quality was rated perceptually. The client demonstrated low severity normal voice quality without strain.

Vocal efficiency: AS's maximum phonation time for /s/ was 20 seconds and 23 seconds for /z/. Due to the fact that /s/ and /z/ are both alveolar fricatives and only differ in their voicing, it is expected that the maximum phonation time for /z/ would be longer since the air must pass through an extra restriction of vibrating vocal folds. The s/z ratio was calculated to be 0.87 which is within normal limits (0.8-1.4 seconds for a typical adult), indicating proper and complete vocal fold closure. A's maximum phonation time for /a/ was 19 seconds, which is also within normal limits (15-25 seconds for a typical adult). Overall, AS's vocal efficiency was found to be normal.

Fundamental frequency (pitch): Pitch for AS's age and gender was perceived to be normal and the habitual fundamental frequency was 122 Hz, which is within the normal range for a 55-year-old male. AS had a fundamental frequency range of 84 Hz to 333 Hz, translating to 16.2 semitones. The range was expected to be at least 24 semitones and therefore it was not within normal limits.

Loudness: AS's loudness was subjectively observed and perceived to be within normal limits.

Prosody: Prosody was observed through voice recordings and all aspects were perceived to be within normal limits

Speaking Rate: AS had a speaking rate of 157.1 words per minute, which did not fall within normal limits due to the pauses taken between thoughts and words. These pauses, along with some repeat or filler words, brought down the speaking rate even though his speech was fully functional. His articulation rate was within normal limits at 5.38 syllables per second. The client's diadochokinetic rates (DDK) were 4.6 for "puh", 4.0 for "tuh", 4.8 for "kuh", and 2.0 for "puhtuhkuh". The "puh", "tuh", and "kuh" rates were much higher than the "puhtuhkuh" rate, which can be attributed to AS's symptoms of dysarthria, including slurred speech and poor coordination.

Respiration: AS's respiration was observed to be within normal limits, however the client reported running out of breath occasionally.

Resonance: AS's resonance was observed to be within normal limits.

Articulation and Intelligibility: AS received a score of 0.69 on the single word phonetic contrast test and a 0.62 on the sentence intelligibility test. The tests were judged by an unfamiliar everyday listener and scored by the clinician. Errors in the single word phonetic contrast test centered around initial and final consonant production. All of the vowels in the listeners transcription remained the same, even if the word was interpreted incorrectly. For example, AS produced the word "geese" and the listener wrote down "peace." In this case the initial consonant was misunderstood, but rest of the word is comprised of the same sounds. In the case of initial consonant clusters, the first sound was sometimes omitted in the transcription, such as "lend" for "blend." The single word test score was higher than the sentence test, which can be attributed to the client's slurring when it comes to conversational speech. Overall articulation in AS's conversational speech was more difficult to understand in longer sentences. The listener missed a lot of words in the middle of sentences due to slurred speech, but was able to correctly transcribe the beginning and end. Similarly, the listener transcribed a contraction when the client said two separate words.

HEARING: AS did not complete a hearing test, however his hearing was within normal limits at the conversational level.

TRIAL THERAPY: Not attempted.

IMPRESSIONS: AS, a 55-year-old male was referred to speech therapy due to concerns regarding his dysarthria and potential neurodegenerative disease. The client's communication is mainly affected by decreased intelligibility due to slurring and irregular articulation errors. While a majority of his phonation was considered to be normal, neither his speaking rate nor his DDK rates were within normal limits. Additionally, AS scored a 0.62 on the sentence intelligibility test and a 0.69 on the single word phonetic contract test. These scores were based on a transcription from an

unfamiliar everyday listener and reflect his frequent articulation errors. Based on clinical observation and self-report, it was determined that AS presents with ataxic dysarthria.

PROGNOSIS AND RECOMMENDATIONS

It is likely that AS's speech would improve with therapy, strengthening his articulation and speaking rate. However, with the presence of a possible neurodegenerative disease there is potential for decline in the future. In this case, speech therapy would be beneficial as a maintenance measure to preserve speech functions. Therapy should focus on client goals/concerns and improving articulation. The following is recommended:

1. Speech therapy regarding speaking rate and articulation
2. Follow-up with neurologist
3. Follow-up with PT and OT regarding gait and motor function