CASE REPORT

Telerehabilitation with a Patient Diagnosed with Acromegaly and Bilateral Total Loss of Vision Secondary to Pituitary Macroadenoma: A Case Report

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ABSTRACT

Coronavirus disease 2019 (COVID-19) caused unprecedented disruptions in the lives of people, inducing a change in social behavior because of quarantine and physical distancing measures for health safety. It greatly affected not only the general population but also the healthcare system, forcing healthcare providers and consumers to adjust from the traditional mode of in-person consultation to telemedicine to enable safe and prompt delivery of adequate and efficient patient care. A 35-year-old female was diagnosed with acromegaly secondary to pituitary macroadenoma, presenting as a 10-year history of weight gain, amenorrhea, hand and feet enlargement, coarse facial features, and bilateral vision loss. Patient then underwent craniotomy, right petrosal cranialization of frontal sinus, and tumor excision during the height of the pandemic in a COVID-19 referral center. Post-operatively, she was assisted in all activities of daily living. She was discharged after a few days of in-patient rehabilitation in order to decrease risk of contracting COVID-19. Telerehabilitation was then done using both asynchronous and synchronous methods while the patient stayed at home. Given the patient's functional and visual disabilities, it was a challenge to do the traditional telerehabilitation techniques that highly rely on intact visual senses. We hereby share our experiences in providing virtual care amid these challenges towards achieving the patient's optimal rehabilitation goals.

Keywords: case report, telerehabilitation, COVID-19, acromegaly, visual rehabilitation, disability

INTRODUCTION

The first case of the coronavirus disease 2019 (COVID-19) in the Philippines was reported on January 30, 2020.[1] As a result, the Philippine General Hospital (PGH) had to make necessary changes in its operations, such as the closure of non-emergent health services like the outpatient department, Ophthalmology ward, and Rehabilitation Medicine ward to name a few, limiting admissions to only COVID-related and emergency cases, and encouraging early discharge of inpatients.[2,3] In response, telerehabilitation, a subset of telehealth or telemedicine, played a pivotal role in reconnecting patients to their rehabilitation providers over a distance through information and communications technologies, most commonly through videoconferencing.[4-6]

Pituitary adenoma is the most common cause of the chiasmal syndrome and are classified based on their size. Microadenomas are tumors smaller than 10 mm while more than that is called macroadenoma.[7] Tumors can also be secretory or non-secretory such as when they secrete one or more hormones in excess, as described as the secretory pituitary adenomas, but most are clinically inactive.[7,8] Classically, the non-secretory tumors present with vision loss, whereas patients with secretory tumors are usually

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referred to ophthalmologists for evaluation due to hormonal imbalances that affect bodily functions.[9,10]

In this case report, we present an adult female diagnosed with acromegaly and bilateral total vision loss. At the height of the pandemic, the patient was discharged from PGH without achieving functional independence. In order to ensure continuity of rehabilitation, telerehabilitation was offered. This report highlights the utility of telerehabilitation in providing access to services despite the challenges brought about by the pandemic and the patient's functional and visual limitations in using the technology.

CASE DESCRIPTION

A 35-year-old female, right-handed, college graduate, former school nurse, hypertensive, and diabetic with good compliance to medications, was admitted to PGH and subsequently referred to the Rehabilitation Medicine service last July 11, 2020 as a case of pituitary macroadenoma (growth hormone-secreting), with secondary panhypopituitarism (adrenal insufficiency, hypothyroidism, hypogonadism), optic chiasm compression, acromegaly, diabetes mellitus, and multinodular goiter. She presented with a 10-year history of undocumented weight gain, amenorrhea, coarse facial features, enlargement of bilateral hands and toes, intermittent headaches, and bilateral blurring of vision wherein she described as still being able to read and recognize objects but with less clarity and accuracy. In 2014, her symptoms progressed wherein she noted that she cannot fit into her clothes anymore, not able to wear accessories on her hands, and unable to wear any kind of footwear due to the marked enlargement of her hands and feet with persistence of amenorrhea and headaches, and worsening blurring of vision now with visual acuity of counting fingers. These progression of symptoms prompted consult with a private endocrinologist wherein a brain magnetic resonance imaging (MRI) revealed a 5-cm mass on the pituitary gland. The patient was then referred to PGH and advised to undergo surgery. However, she opted to undergo octreotide infusion instead. After a few months of medical treatment, she was unable to continue due to financial constraints and eventually lost to follow up.

In the interim, the patient suffered from increased headaches, progressive blurring of vision now with only light perception, and excessive weight gain and enlargement of hands and feet making her unable to fit into her clothes and wear any kind of footwear. She had difficulty in functional mobility because of her lower limb deformities for which no footwear could fit anymore and transfers and ambulation became cumbersome. She placed a chamber pot beside her bed for toileting needs and used a make shift white cane for short-distance ambulation. One month prior to admission, she became completely blind in both eyes, and incapacitated her from more severe and frequent headaches, further limiting her functional mobility. She was then subsequently admitted at PGH June 2020 due to the progression of her symptoms. She underwent Right Pteronial Craniotomy Excision of Tumor and Right Petrosal Cranialization of Frontal Sinus, Subdural Excision Tumor and was referred to the Rehabilitation Medicine service and underwent 3 inpatient therapy sessions of post-operative rehabilitation and initiation of visual rehabilitation. However, due to the rise of cases of the pandemic, the patient was discharged early with only a functional capability of having modified independence in ambulation with white cane in short distances (5 meters) and requiring moderate to maximal assistance in ADLs such as feeding, dressing, toileting, bathing and grooming.

The problems encountered for rehabilitation upon initial evaluation post-operatively is shown on Figure 1.

Intervention

To resume rehabilitation amid the restrictions at the height of the pandemic, the patient was offered to undergo telerehabilitation with the following goals: to monitor and manage her medical conditions postoperatively; to improve her functional independence in activities of daily living; to evaluate and modify her physical environment at home, if needed, to mitigate her risk of falls; to ensure compliance with prescribed home exercises; and to educate the patient's caregivers on how to monitor the patient and attend to her needs.

The patient was then contacted via text messaging with her mother, her primary caregiver, to ask whether she was amenable to telerehabilitation via videoconferencing. The patient and her mother confirmed that they had stable internet connection. However, they did not own a smartphone capable of videoconferencing. They would have to borrow it from the patient's sister, who would only be home during the weekends. The telerehabilitation team composed of the resident physician, two consultants, a physical therapist, occupational therapist, and psychologist then agreed to conduct the teleconsultation and teletherapy sessions on weekends. Informed consent was secured using the Zoom™ application. However, since the patient is visually compromised, the consent was read out loud to her by the mother, and was video-recorded for documentation upon their consent. To ensure privacy, the video files of the consent and succeeding telerehabilitation sessions were saved in a password-locked external hard drive accessible only to the resident physician to ensure data security.

Before every teleconsultation and teletherapy session, the scheduled date and time were first confirmed by close coordination with the patient, doctors, and therapist beforehand. The telerehabilitation program was sent to the therapist days before each teletherapy sessions. The patient was also reminded ahead of time to wear comfortable clothes for exercise and prepare common household materials used for her usual activities of daily living for retraining, such as fork and spoon, toothbrush, hairbrush, and upper and lower garments for simulation of dressing. The presence of an adult relative who was able to assist in the technical and

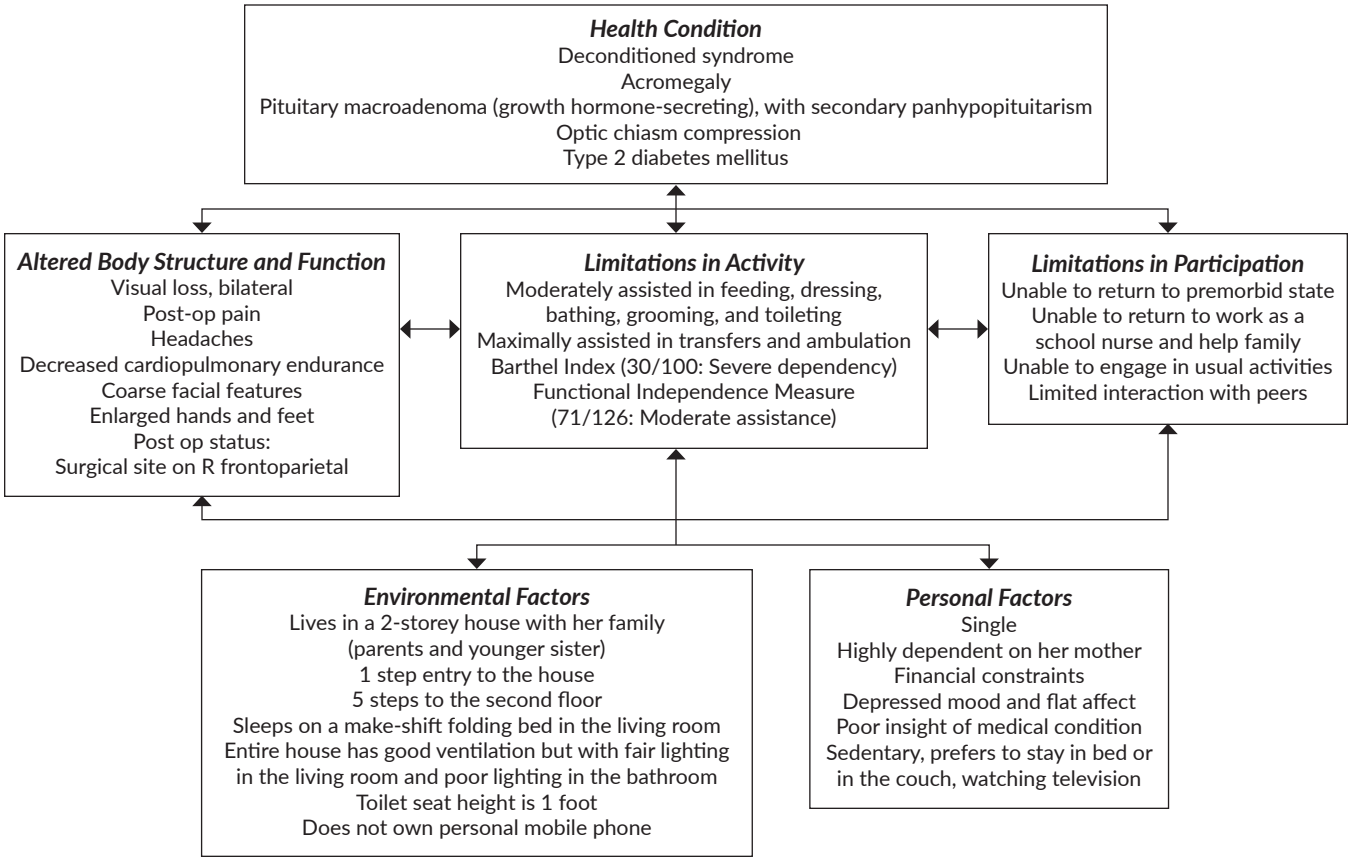

Figure 1. Rehabilitation Medicine problem list according to the World Health Organization – International Classification of Functioning, Disability and Health (WHO-ICF) Framework upon initial evaluation postoperatively.

safety aspects of each teletherapy session was also ensured. Before the first telerehabilitation encounter, a technical dry-run of the technical set-up had to be conducted wherein the patient and caregiver were given specific instructions on how to position the video camera to obtain an optimal view needed for each telerehabilitation session. Environmental safety and privacy considerations were also reiterated to them. Thus, during the said technical dry-run, a "virtual" ocular inspection of the patient's home environment was done. If needed, the family was asked to remove floor clutter such as cords, trash, or unnecessary things that could serve as fall risks, to rearrange the furniture in a way that would be most comfortable for the patient to move around, and to place frequently used items in easily accessible areas. At the start of each virtual session, the telerehabilitation team ensured these environmental modifications were in place and made sure that the internet connectivity was stable at that time to prevent unnecessary delays.

Prior to the actual teletherapy sessions, a thorough history and virtual physical examination was done by the physiatrist in order to have a baseline data of the patient. She was noted to be conversant but with flat affect, depressed mood, but follows commands. She was free from cough and colds, with no headaches noted, with both eyes noted to have no light perception. An actual manual muscle testing was not done due to the virtual set up, but upon detailed instructions on doing functional muscle testing, the patient had a baseline muscle grade of 3/5, being able to move extremities against gravity, without resistance.

Based on our environmental evaluation (Figure 2), the patient resides in a 2-floor house with steps at the entrance and inside. Clutters, cords, and cloth floor mats are present throughout the house, posing potential fall hazards. Lighting is inadequate in several areas, including the bathroom. Caregivers tend to provide assistance rather than encourage independence, as seen in the placement of needed items out of reach. The patient sleeps on an unstable foldable bed in the living room and eats meals on the sofa. Socially, she lives with her parents and siblings, primarily receiving care from her mother. However, opportunities for independence are limited, leading to a sedentary lifestyle. To address these issues, modifications to the physical environment, such as removing hazards and improving lighting, can enhance safety and mobility. Additionally, fostering independence in daily activities and providing support from caregivers can promote engagement and improve overall well-being.

As seen in Table 1, throughout five months, the patient had a total of 15 teleconsultations with the Rehabilitation

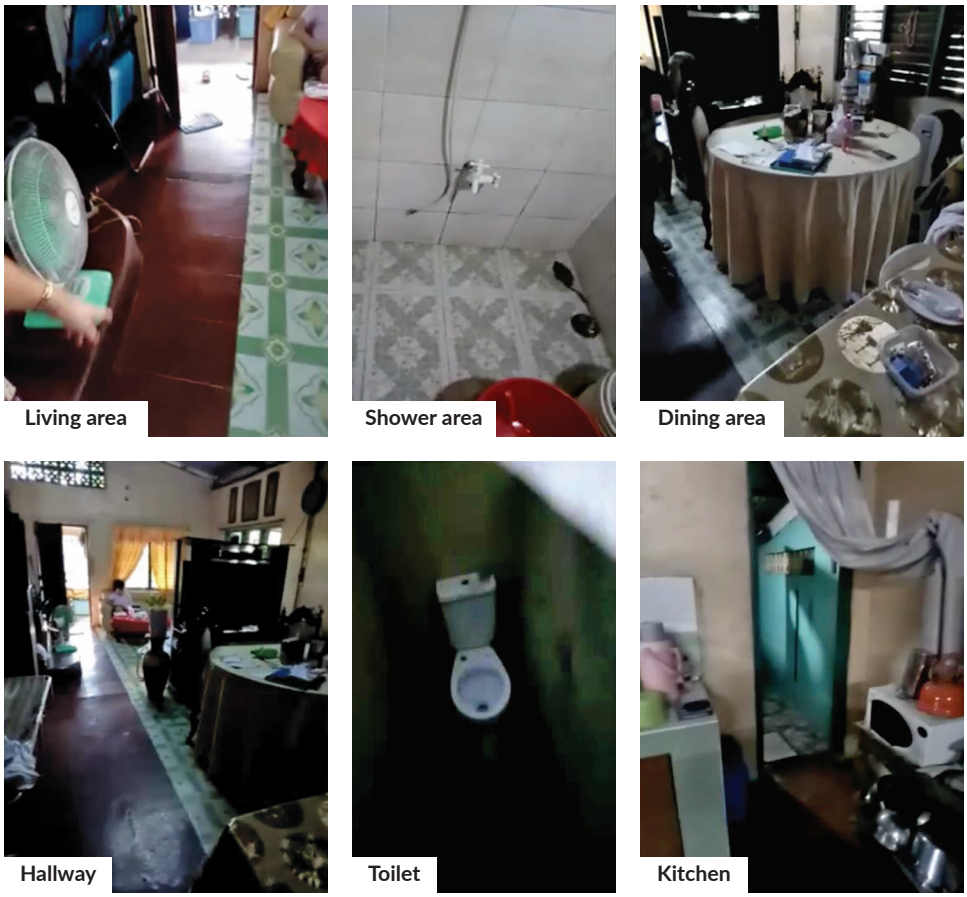

Figure 2. Environmental Assessment via Telerehabilitation.

Medicine team spearheaded by the physiatrist, together with a Physical Therapist, Occupational Therapist, a Psychologist, the patient, and her caregiver to assist her all throughout the teletherapy session. In total, the patient had four PT sessions, 10 OT sessions and one session with the Psychologist. The duration of the teleconsultations ranged from 10 to 45 minutes, Tagalog (Filipino) was the main language used, and which the teletherapy sessions were conducted either through phone call or videoconferencing, depending on the reliability of the internet at each time. The initial teleconsultation was the longest and had to be done through videoconference to obtain a relatively more thorough physiatric assessment. Moreover, the patient's complete history was also taken, and signs and symptoms of infection and proper wound healing of the post-operative site were asked and verified through virtual inspection. During the whole duration of each session, safety precautions were observed at all times.

For the succeeding teletherapy sessions, the patient and telerehabilitation team had adjusted to the virtual method of follow-up. Succeeding teletherapy sessions focused on strength, transition and transfer training, and ambulation exercises with the physical therapist; visual rehabilitation, ADL retraining, and environmental interventions with the occupational therapist; however, a brief depression/anxiety screening, patient and family counseling, and coping strategies with the psychologist was only done due to the patient's refusal to proceed with psychotherapy sessions.

Figure 3. Telerehabilitation Sessions.

The patient completed a total of 15 teletherapy sessions in a span of 18 weeks. Most of the teletherapy sessions were conducted via Zoom™ which lasted from 30 minutes to one hour. Each session was facilitated by an experienced therapist, who performed virtual demonstrations and supervision of specific exercises or rehabilitation techniques as prescribed by the physiatrists. Throughout each session, the primary caregiver was available and patient safety was ensured. After each teleconsultation and teletherapy session, the pertinent events, improvements, and challenges were all documented in an electronic medical record kept secure following the telerehabilitation guidelines of the Department of Rehabilitation Medicine.

During the telerehabilitation process (Figure 3), delays and some obstacles were also observed such as lack of motivation from the patient, unavailability of the gadget to be used or unavailability of the caregiver, weather conditions and erratic schedules of both parties. However, efforts were taken to improve the telerehabilitation process such that an agreed schedule by the therapist and physiatrist was coordinated a day before each consult or therapy session, wherein the patient was informed and confirmed through text messaging or phone call. Sample pictures and videos were also shown during each session and materials needed were asked to be prepared prior to each session to increase efficiency.

Table 1. Timeline of patient's course

Date	Findings / Events	Interventions / Outcomes
2010	Undocumented weight gain, amenorrhea, coarse facial features, enlargement of hands and feet, intermittent headaches, and blurring of vision bilaterally	No medications taken. No consult done.
2014	Progression of symptoms, increase in frequency of headache Further progression of physical changes, blurring of vision and persistence of amenorrhea	Consult with a private endocrinologist → MRI revealed Pituitary Adenoma (5 cm in size) → referral to PGH and was advised to undergo surgery, opted to have Octreotide infusion instead
2014 – February 2020	Progression of signs and symptoms but with financial constraints → uncompliant with medications	No medications taken, no consult done, and was lost to follow up → compensated by not wearing footwear, placed a chamberpot in her bedroom and used a make-shift white cane
March 2020	Further progression of symptoms, increase in frequency and intensity of headache. Further progression of physical changes and blurring of vision and persistence of amenorrhea	Sought consult at PGH → scheduled for surgery but was deferred due to the pandemic
June 2020	Had sudden total loss of vision bilateral with increased frequency and severity of headache and vomiting episodes	Prompting consult at PGH → Admitted
July 2020	s/p Right Pteronial Craniotomy Excision of Tumor and Right Petrosal Cranialization of Frontal Sinus, Subdural Excision Tumor	Post-surgery → referred to Rehab → underwent 3 inpatient therapy sessions
July 2020	• Early discharge of the patient • Modified independence in ambulation with white cane • Required moderate to maximal assistance in feeding, dressing, toileting, bathing	Telerehabilitation was offered → was lost to follow up due to lack of resources and lack of knowledge and awareness of telerehabilitation service
February 2021	Advancement and improved awareness to teleconsultations	Patient was re-contacted and telerehabilitation was again offered. Consent was obtained → scheduled for teleconsultations, telerehabilitation sessions
March 2021	Visual loss bilateral, post-op pain, headaches, decreased cardiopulmonary endurance, coarse facial features, enlarged hands and feet. Post op status: surgical site on R frontoparietal	Teletherapy sessions initiated
March – April 2021	Challenges encountered: • Still not adapted to the telerehabilitation process • Lack of easy access to video-capable gadget • Lack of motivation from the patient • Unavailability of the caregiver • Weather conditions • Erratic schedules of both parties	Efforts were taken to improve the telerehabilitation process: • Agreed schedule by the therapist and physiatrist was coordinated a day before each consult or therapy session • Sample pictures and videos also shown during each session • Materials needed were asked to be prepared prior to each session to increase efficiency
May 2021 – August 2021	Slowly adapting to telerehabilitation process	Continuous telerehabilitation sessions → improvements in strength, transitions, transfers, ambulation, and performance of ADLs and iADLS
August 2021	Patient and telerehabilitation team had adjusted to the virtual method of follow-up → had total of 10 teleconsultations and teletherapy sessions	• Marked improvement in her mobility, performance of ADLs, and overall function • Improved Barthel Index score and Functional Independence Measure scores
August 2021	Rise in number of cases of COVID-19 virus in the country	Patient contracted the virus which led to the patient's demise

Outcomes

Due to the rise of COVID-19 cases in the country, the patient contracted the virus which eventually led to the patient's demise. However, prior to the unfortunate incident, improvements in strength, transitions, transfers, and ambulation were observed from previously needing moderate to maximal assistance from the caregiver with the patient only exerting 10-20%, which became needing only minimal assistance with the patient exerting 70-80% of effort and/or modified independence with the use of assistive device in doing those activities. Post-telerehabilitation, the patient showed marked improvement in her strength from a manual muscle test score of 3/5 to 4/5. Her mobility, performance of ADLs, and overall function, as evidenced by a Barthel Index Score of 65/100 from a baseline score of 30/100 and Functional Independence Measure Score of 95/126 (minimally assisted) from previously 73/126 (very dependent) also increased. Furthermore, the patient's improvements in basic and instrumental ADLs were also noted from being previously moderately assisted in feeding, dressing, toileting and maximally assisted in bathing to minimally assisted and modified independence. Several home modifications and recommendations with regards to feeding, dressing, bathing, and toileting to increase the self-efficacy and efficiency in performing these ADLs were initiated. Examples of which were suggesting the use of clock method for feeding, wherein the patient was instructed to think of her plate as a face of a clock with 12:00 at the top and 6:00 at the bottom. Modifications and guides were also given such as placing food items in consistent locations, using plastic cup placed on the upper right side of the patient's table, and training the patient to gauge the weight of the food on the spoon to help indicate the size of the food portion to avoid aspiration. Other home modifications that were advised were adding tactile or embossed markers to the things commonly used by the patient for her to easily distinguish them, improving the room lighting, removing clutter and wires that would increase the risk of fall, organizing clothes wherein tops, bottoms, and intimates were strategically placed in a familiar way to the patient, and providing a separate basket for toiletries and specific areas dedicated to the materials usually needed by the patient. These were all carried out for greater ease, access, safety, and independence for the patient geared toward improving her quality of life in spite of her disabilities.

DISCUSSION

Due to the emerging technology as well as the rapid increase of cases of the global pandemic, COVID-19 virus, various avenues were explored to continuously provide effective healthcare to patients such as telerehabilitation. Telerehabilitation is an emerging way of delivering rehabilitation services where and when they are needed despite the barriers of physical and social distancing, health risks, costs, time constraints, and even patients' technological and physical limitations.[11]

In the Philippines, a developing country composed of 7,600 islands with nearly 110 million Filipinos, telemedicine seems a viable solution to expand the reach of limited healthcare providers and resources.[12,13]

Similar to traditional in-person delivery of rehabilitation interventions, telehealth may play a role in acute and subacute phases of care and not only during the long-term or maintenance phase especially in instances wherein face-to-face interactions such as during center-based or homecare therapy services may be impractical, expensive, and unsafe in the context of COVID-19 pandemic.[14]

Various local private and government telemedicine programs using different, mostly low-cost technologies were launched even before the COVID-19 pandemic.[12] However, most of these programs are not specific to different disabilities, such as visual loss that may limit capacity to engage in technological gadgets.

To monitor progress in patients undergoing telerehabilitation, the use of standardized outcome tools is essential. These tools provide objective measurements of functional status and independence, aiding in the evaluation of treatment effectiveness and guiding clinical decision-making.[15] While the Functional Independence Measure (FIM) is widely utilized for this purpose, its applicability in the context of telerehabilitation may be limited due to its focus on in-person assessments. Instead, alternative measures tailored for remote monitoring, such as telehealth-specific functional assessment tools, may be more suitable for assessing patients' functional abilities and tracking their progress over time.[16]

For patients with acromegaly especially those with concomitant visual impairment, environmental modifications and compensatory strategies also have to be made not only to ensure the safety of patients, and the accuracy and completeness of tele-evaluation, but also to improve the independent functioning of visually impaired individuals who will undergo telerehabilitation. The American Occupational Therapy Association and other professional organizations recommend that these modifications, especially for those with visual impairment, have to be provided within their environment, in their home, community, and workplace. These interventions are simple, practical, and "low-tech" approaches, such as increasing illumination to help individuals see better, the use of anti-skid mats, placing of handrails, using plate dividers, felt-tip pens for writing, talking watches, tactile devices, and the use of the well-known Braille and stylus for reading and writing. All of these modifications and compensatory strategies can be beneficial for patients with low vision. Aside from the above-mentioned compensatory techniques and modifications, several assistive devices can also be used. An example of which would be the use of white cane, which helps visually-impaired patients scan the environment for obstacles or other markings when moving

around.[17,18] Nevertheless, we have to note that the efficacy of these compensatory techniques and modifications will depend on the patient's goals, their level of function, and the level of independence that patient wants to achieve.

In this case report, we present a case of an adult female diagnosed with acromegaly who suffers from bilateral vision loss due to multiple medical conditions, who was admitted for surgical intervention and was subsequently referred to our service for post-operative care and initiation of visual rehabilitation. However, due to the COVID-19 pandemic, the patient was discharged early and had limited access to healthcare.

Pre-pandemic, once the rehabilitation medicine patients are discharged, they are advised to follow up with their physiatrists and continue their rehabilitation program with their institutions of choice face-to-face. However, just like in the case of our patient, due to the pandemic, hospital in-patients were discharged early, they were lost to follow up with their respective physicians, and the temporary closure of most rehabilitation centers instigated difficulties in continuing their therapy program. Because of these events, telerehabilitation was then initiated, and was offered to our patient which is an alternative to the usual follow-up consultation and therapy sessions which aimed to continue delivering patient care from the comfort of the patients' homes whilst observing quarantine protocols and to support them in achieving their rehabilitation goals despite the pandemic. After acquiring consent, multiple therapy sessions were provided in the comforts of the patient's home through videoconferencing with the physiatrist and the therapist. However, some difficulties were encountered during the course of management of this patient using telerehabilitation as a new way of delivering healthcare. Some challenges that were encountered include poor internet connectivity, lack of available resources or easily accessible video-capable gadget, erratic schedules of both parties, and unpredictable weather conditions. Nevertheless, combined efforts were done to prevent or limit these obstacles from happening and to improve the entire telerehabilitation process. During the entire telerehabilitation process, the patient and her family were offered assistive technologies such as with the use of a smartphone or computer however due to financial constraints they declined. Moreover, the patient and her family were adamant with her not returning to work since it was still the peak of the pandemic during that time.

CONCLUSION

This case report not only shows the importance of follow up and continuity of rehabilitation sessions in improving the overall quality of life of patients but more so it shows that different ways and means can be explored for us to deliver the best care for our patients. This case report shows the flexibility, adaptability, accessibility, and universality of the use of telerehabilitation to varied circumstances. It shows that despite a worldwide pandemic, therapeutic interventions can still be done even in a low-cost, low-resource setting. Despite some challenges that may be encountered along the way, patients' rehabilitation goals will still be achieved and this may also aid patients, particularly visually-impaired patients who has activity limitation issues, in achieving functional independence and in turn have an improved quality of life.

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Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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REFERENCES

1. World Health Organization. Coronavirus disease (COVID-19) Situation Report 1 Philippines 9 March 2020 [Internet]. 2020 [cited 2021 Nov 20]. Available from: https://www.who.int/docs/default-source/wpro---documents/countries/philippines/emergencies/covid-19/who-phl-sitrep-64_covid-19_1december2020.pdf?sfvrsn=657059c7_3.
2. Hapal K. The Philippines' COVID-19 Response: Securitising the Pandemic and Disciplining the Pasaway. J Curr Southeast Asian Aff [Internet]. 2021;40(2):224–44. Available from: https://journals.sagepub.com/doi/pdf/10.1177/1868103421994261. DOI: 10.1177/1868103421994261
3. Toral JAB, Alba MV, Reyes Z, Molina AJR. The development of the Philippine General Hospital as a Referral Center in the COVID-19 pandemic: A qualitative study. Acta Med Philipp [Internet]. 2021;55(2). = DOI: http://dx.doi.org/10.47895/amp.v55i2.2851.
4. Leochico CF, Valera M. Follow-up consultations through telerehabilitation for wheelchair recipients with paraplegia: a case report. Spinal Cord Ser Cases. 2020;6:58. PMID: 32632104 PMCID: PMC7338509 DOI: 10.1038/s41394-020-0310-9
5. Leochico C, Espiritu A, Ignacio S, et al. Challenges to the emergence of telerehabilitation in a developing country: a systematic review. Front Neurol. 2020;11:1007. PMCID: PMC7505991 PMID: 33013666.
6. Mojica JA, Bundoc JR. Inter-observer reliability in the use of cellphone technology as a community-based limb loss screening tool for prosthesis use. PARM Proc. 2014;6:45–50. doi: 10.3389/fneur.2020.01007 PMCID: PMC7505991 PMID: 33013666
7. Adigun OO, Nguyen M, Fox TJ, Anastasopoulou C. Acromegaly [Updated 2021 Sep 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. Available from: https://www.ncbi.nlm.nih.gov/books/NBK431086/.
8. Webb SM, Badia X. Quality of Life in Acromegaly. Neuroendocrinology. 2016;103:106-111. PMID: 25661974 DOI: 10.1159/000375451

9. Ershadinia N, Tritos NA. Diagnosis and Treatment of Acromegaly: An Update. Mayo Clin Proc. 2022 Feb;97(2):333-346. doi: 10.1016/j.mayocp.2021.11.007. PMID: 35120696.
10. Asensio-Sánchez VM, Foncubierta J. Progressive loss of vision caused by asymptomatic pituitary macroadenoma: role of OCT. Int Med Case Rep J. 2016;9:291–293. DOI: 10.2147/IMCRJ.S113339 PMCID: PMC5033608 PMID: 27695368
11. Leochico CFD. Adoption of telerehabilitation in a developing country before and during the COVID-19 pandemic. Ann Phys Rehabil Med [Internet]. 2020;1–2. Available from: https://doi.org/10.1016/j.rehab.2020.06.001. PMID: 32544528 PMCID: PMC7293483.
12. Giz.de. Phillipines: visiting the Doctor Online [Internet]. 2020 [cited 2022 Feb 4]. Available from: [https://www.giz.de/en/aboutgiz/106908.html].
13. Philippine Statistics Authority. Projected population, by age group, sex, and by single calendar year interval, Philippines: 2010–2020 [Internet]. 2010 [cited 2022 Feb 4]. Available from: https://psa.gov.ph/sites/default/ files/attachments/hsd/pressrelease/Table%204_9.pdf
14. Fernandez-Marcelo PG, Ho BL, Faustorilla JF, Evangelista AL, Pedrena M, Marcelo A. Emerging eHealth directions in the Philippines. Yearb Med Inform. 2012;7:144–152. PMID: 22890357.
15. Ween JE, Mernoff ST, Alexander MP. Recovery Rates after Stroke and Their Impact on Outcome Prediction. Neurorehabilitation and Neural Repair. 2000;14(3):229-235. doi:10.1177/154596830001400309 PMID: 35954971
16. University of South Australia. Functional Independence Measure. Aust J Physiother. 2009;55:65. Available from: https://core.ac.uk/download/pdf/82728415.pdf.
17. PGH-Section of Occupational Therapy. Interventions for people who are totally blind. 2020.
18. PGH-Section of Occupational Therapy. Interventions for people with low vision. 2020.