CASE STUDY

IJPHY

MANAGEMENT OF A GUILLAIN BARRE SYNDROME PATIENT THROUGH THREE TRACK REASONING: A CASE STUDY

[1]Shamima Islam Nipa
[2]Mohammad Mustafa Kamal Rahat Khan
[3]Mohammad Sohrab Hossain
[4]Mohammad Habibur Rahman
[*4]Md. Shofiqul Islam

ABSTRACT

Background: Clinical reasoning is a thinking and decision making process which occur in clinical practice. It helps the health care providers to solve the clinical problem by using their reasoning process in an effective and efficient manner. Three track reasoning in one of the clinical reasoning process which includes the procedural, interactive and conditional reasoning to diagnose as well as ensure proper rehabilitation service according to patient and patient's family members' needs.

Methods: A single case based study through the three track reasoning process. The purpose of this study was to explore the management strategies of a Gullian Barrie Syndrome (GBS) patient through three track reasoning. We have tried to show how the basic idea behind the reasoning process helped to determine the reasoning process and diagnosis. However it has performed through theory and observation. We have also showed how we used the reasoning process through with the common sense reasoning. However it was the part of procedural reasoning in three track clinical reasoning. In three track reasoning, there is also interactive and procedural reasoning part through which we told patient story about his condition, identified his and his family members expectations and to establish hypothesis as GBS. So three track reasoning also supported us to do reasoning process rather than selecting another reasoning process.

Results: After analyzing the reasoning process it was identified that to be strict in a single reasoning process is very difficult. Clinical reasoning is the clinician's ability through which they can consider the interpretation of different clinical findings. An expert clinician must have critical thinking skill rather than ignoring any symptoms or overemphasize the symptoms. In addition, patient's knowledge, believes and reasoning was found an important part of clinical reasoning process in this study.

Conclusion: We have been practicing clinical reasoning in our day to day practice, but we were not conscious about it. That's why we may not critically think about it at the time of dealing with this case. Thus, selecting three track clinical reasoning model the case was diagnosed and treated accordingly.

Keywords: Clinical reasoning, Knowledge, Cognition, Meta-cognition, Guillain Barre Syndrome (GBS), Three Track Reasoning.

Received 11th November 2015, revised 18th November 2015, accepted 19th November 2015

DOI: 10.15621/ijphy/2015/v2i6/80761

www.ijphy.org

[1]Senior Clinical Physiotherapist, Department of Physiotherapy, Centre for the Rehabilitation of the Paralysed, Savar, Dhaka, Bangladesh.
[2]Clinical Occupational Therapist, Department of Occupational Therapy, Centre for the Rehabilitation of the Paralysed, Savar, Dhaka, Bangladesh.
[3]Associate Professor, Department of Physiotherapy, Bangladesh Health Professions Institute, The academic institute of the Centre for the Rehabilitation of the Paralysed, Savar, Dhaka, Bangladesh.
[4]Assistant Professor, Department of Physiotherapy, Bangladesh Health Professions Institute, The academic institute of the Centre for the Rehabilitation of the Paralysed, Savar, Dhaka, Bangladesh.

CORRESPONDING AUTHOR

[*4]Md. Shofiqul Islam

Assistant Professor,
Department of Physiotherapy,
Bangladesh Health Professions Institute,
The academic institute of the Centre for the Rehabilitation of the Paralysed,
Savar, Dhaka, Bangladesh.

INTRODUCTION

Clinical reasoning is the internal thinking and decision making process of health professionals in their professional practice. It helps the therapist or health professionals to take the best judgment during clinical practice.[2,3] Edwards, et al. (2004) stated that examination and interpretation make the reasoning process more explicit[4]. It is the process by which a practitioner can think clearly, apply theory more skillfully, and reflect on their practice. It also acts as a safeguard for the profession.[5] Health professionals or rehabilitative practitioners work with multiple problems in different settings of the patients. Rehabilitative service helps the disabled people to restore and maintain maximum independence in full physical, mental, social and intellectual ability and ensure the participation in all aspects of life.[6] The integration of the clinical reasoning into rehabilitation practice is challenging. Through this reflective process practitioner emerged different range of management procedure considering the patients needs, expectations, economical and social factors.[7] So, the professional's must have strong propositional and non-propositional knowledge, thinking process and intellectual capacity of linking between the knowledge and thinking process in order to make the foundation of sound clinical practice. We would like to explain as therapists while working with this patient. In this case based study, we assessed a 19 years old male patient who was undiagnosed and came to outpatient service of CRP 2 years ago. During management of case, we faced difficulty to ensure diagnosis, which seems to be solved through procedural reasoning, however we interacted with the patient about the treatment selection, and then we went through the interactive reasoning. Finally, we also discussed about the future prognosis which seemed to go through the conditional reasoning as well. Thus the aim of the study was to demonstrate three track reasoning process through a single case of GBS using inter-professional collaboration. In order to attain the aim we set objectives which were to improve the basic understanding about clinical reasoning, to realize the importance of clinical reasoning in rehabilitation science, to know about the factors influencing of clinical reasoning in rehabilitation science, to know how to critically evaluate the different reasoning process, to develop idea about the process of application of different method of clinical reasoning in day to day practice and to develop the mutual understanding and activity level among professionals.

Health professionals or rehabilitative practitioner work with multiple problems and integrates those with the clinical reasoning which is challenging. To complete the clinical reasoning process professionals used the three elements of clinical reasoning which includes knowledge cognition, and meta-cognition. These elements also were used during selection of the best reasoning process for the case with a view to different professionals. Knowledge is absolutely clear and conscious idea about the reasoning behind the course of action. In clinical practice, diagnostic accuracy of a case depends on practitioners experience and knowledge.[8] There are biomedical knowledge which derived from different theory whereas clinical knowledge derived from the practice and experience of the clinicians[5]. The term cognition defined as the critical thinking process to synthesis, analysis and interprets the information that the clinicians gathered from the patients or participants, documentation, observation etc and utilize it with the existing knowledge.[9] Meanwhile evidence showed that knowledge and cognition is interdependent with each other.[10] Higgs and Jones (2008) stated that meta-cognition makes the bridging or correlation between knowledge and cognition.[5] Meta cognition may be defined as thinking about thinking process of clinicians.[9] By using the meta-cognition a practitioner can identify the quality, limitations and errors of information, misinterpretation of information, judge the reasoning and utilize the knowledge on required action. Jones (1995) stated that clinical reasoning process begins from the initial data or obtained cues.[11] This primary information helps to make impressions or working interpretation which are known as hypothesis. Then cognition involved in hypothesis generation by interpretation these data and synthesis of multiple hypothesis and clues. This initial hypothesis leads to do certain inquiries and test to specific the treatment. This hypothesis testing and generation process continues upon gathered sufficient information to confirm the diagnosis and management.

There are several judgment and diagnosis process in clinical reasoning process. These include, three track reasoning, inductive reasoning, deductive reasoning, hypothetico – deductive reasoning, pattern recognition, narrative reasoning, International Classification of Functioning, Disability and Health (ICF), and Rehabilitation Problem Solving (RPS) model for clinical reasoning. However during our clinical practice sometimes we use these reasoning processes individually or sometimes combined to determine the hypothesis. After a brief analysis of this case we relied on three track reasoning because, it is the reasoning process in which there are three

different parts which may includes the medical problem solving which is quite similar with the hypothetico – deductive reasoning process, in the second part therapist interacted with the person as a social well being and in the third part it is the imagination about the past, present or future about the condition as well as interpretation with those. The names of these tracks are procedural, interactive, and conditional. These are the three main tracks that guide therapists thinking processes in response to their professional boundary. Most commonly the therapists use the procedural reasoning. It is similar to the hypothetico –deductive reasoning. Here the therapists use the sequence of problem identification, goal setting and treatment planning about a problem of interest. According to the procedural reasoning the person think about the physical and emotional limitations of a case. Fleming (1991) stated that this reasoning process act as an "active judgment".[12] Here the therapists interact with the patient as a person. To provide the best possible care the therapist wants to know the disability from the patient's own points of view. The therapists also consider the social well being to gather the patients trust and acceptance. The term conditional reasoning usually used three different ways. Among them, one is the practitioner thinking about the whole condition such as the patient, the disease, the family and the social and physical contexts.[13] Second is the thinking again about the condition which is known as revised condition. Here therapists newly imagined the new state which may or may not be achieved. Third one is the therapist thinking about the future image. Here the patient should be involved in the decision making of therapeutic activities. So it seems the phenomenological aspects of the practice.[14]

Usually when we were thinking about to solve a problem, we switched off from one track to another. However each track has a different focus. When we are thinking about the procedure of the condition then it might goes to the procedural reasoning whereas to understand the person, goes on the interactive track, and the future vision is developed on the conditional track. We put all of these tracks together to form a holistic view of the person and to determine how to enable the client to reach his or her goals. We used multiple strategies to improve a client's level of functioning, and must have a full understanding of the client to plan effective interventions. Through the clinical reasoning process we went through the combination of these processes in different time of diagnosis process as well as selection of best treatment for the patient. Whenever we wanted to be confirmed about the diagnosis, then we had gone through the procedural reasoning as because when we found the patient in paralysis, then we tried to identify the cues which were suddenly paralysis the whole body, intact sensory, normal function of bowel bladder. Then we interpreted these symptoms with our knowledge and experience and it was too much helpful to us to confirm the diagnosis as Guillain Barre Syndrome and differentiate the diagnosis with transverse-myelitis as his sensory and bowel bladder was intact. In fact, Guillian Barre Syndrome (GBS) is an acute inflammatory demyelinating disease of spinal roots and peripheral nerves which is most infectious and recovers spontaneously with the characteristics of flaccid paralysis.[15] We had also ensured the patients participation during goal setting and decision making about the treatment and future image which included the return to normal walk, normal daily activities, stairing without lift as the home environment was on the third floor, go to outside of home including college by delivering writing splint and participate in social activities. So in that sense we had to go through also interactive and conditional reasoning.

CASE REPORT

Patients name: X, Age: 19 years, Sex: Male, Occupation: Student, Diagnosis: GBS. Home Environment: Semi Urban area, Economical status: Good. We would like to explain as therapists while working with this patient; which was difficult to diagnose. At first, we took some history from him and he said that 15 days ago he had fever, diarrhea and rashes on all over the body for one day within these 15 days. He said that, he felt some tingling sensation in his both upper limb and lower limb which were paralyzed within one day with intact bowel bladder. Then his family members took him to the hospital. At their doctor advised him to do nerve conduction velocity test and prescribed vitamin $B_1 + B_6 + B_{12}$. Then the patient takes self discharge and come at Centre for the Rehabilitation of the Paralysed (CRP) as they have heard about the CRP services from their neighbors. At CRP we are working through a multidisciplinary team. We have also the arrangements of case conference for the critical case. In this team, four physiotherapists and one clinical occupational therapist help to confirm the diagnosis as well as develop an effective rehabilitation plan. As this patient was not diagnosed before, that's why we have interpreted with the history, sign/symptom, physical examination, medical reports as well as our clinical reasoning process. After paralysis of whole body he had severe pain, loss of all movements of four limbs and risk of chest complication. We started his

physiotherapy from just slow passive movements, slow stretching of all four limbs and deep breathing exercise to avoid chest complication. Occupational therapist helps him by practicing the fine and gross motor function of upper limb & retrained the activity of daily living. Gradually he was responding towards our rehabilitation plan and added more exercises according to his improvement. When we were continuing treatment, we had also focused on prevent disability like foot drop, hyper extended knee. Then finally the patient started to walk with moderate support after 3 months of his condition. After four months he could walk independently but slowly. At that time we had given gait re-education very safely and focused on advanced pelvic floor exercise as because we need to make him to go to his college by stairing of three floors. The occupational therapist also helps to improve his writing skill to adapt with the study. After 6 months he could go outside of home and could continue his classes at college. In order to meet these sorts of things we have also take concern of the family members of the patient to identify their expectations involve them in the rehabilitation program to solve this case. We have realized that to solve this critical case, we have better used our reasoning process.

DISCUSSION

After analyzing the decision making process, it was identified that it was very difficult to be strict in a single reasoning process. Though, we went through the three tracks reasoning, it also contrasting with the hypothetico reasoning and narrative clinical reasoning process. However in earliest moment we went through the pattern recognition reasoning process after observing the sign, symptoms and cues such as tingling sensation on upper limb and lower limb on left side and considered the patient as a musculoskeletal case condition like referred symptom from cervical spine and lumbar spine. In that sense we have also covered the inductive approach but after found the patient paralyzed, we have realized that it might not be whatever we have considered the disease as a musculoskeletal case. Then we have gone through the hypothetico – deductive reasoning. After long run, we have found that hypothetico – deductive reasoning not only sufficient for this case, as we involved the family members and patient also to take the appropriate history to determine the hypothesis and treatment. In that sense we also used the Narrative reasoning. Mattingly (1991) suggested that narrative reasoning makes a relationship for motives, actions and the consequence of the activities that the therapist can play a role in specific situation.[16] It is the organized time gap which is experienced by the therapist from the beginning up to ending about the experience with a single patient.[17] This reasoning process showed about how the people or client changed over time. Narrative time is dramatic and conflicting. The therapist must have a strong desire about the improvement as because risk is also being there. There is suspense and surprise also, because the assumed goal may or may not be achieved.[18]

Then we thought that three track reasoning might be suitable for this case because in three track there is interactive, procedural and conditional reasoning. Compiling all of which can help to solve this case. According to consider this case we went through the three track reasoning as because, its procedural part is similar to the hypothetico – deductive reasoning which meets a problem with several explanations according to the observation. We have tried to show how the basic idea behind the reasoning process helps to determine the reasoning process and diagnosis. However it has performed through theory and observation. We have also showed how we can use the reasoning process through with the common sense reasoning[1]. However it is the procedural reasoning part of three track clinical reasoning. On the other hand, we have also involved the patient and his family members to determine the hypothesis as well as the treatment. In that sense we might go close through the narrative reasoning. But in my three track reasoning, there is also interactive and procedural reasoning part through which we can tell story about his condition with the patient, identify his and his family members expectations and to establish the hypothesis as GBS. Three track reasoning also supports to do reasoning process rather than selecting the narrative reasoning process. So we can say that clinical reasoning might be mixed up comparing with one reasoning with other and overlapping process also and a single or individual clinical reasoning may not meet our needs.

CONCLUSION

Clinical reasoning is the clinician's ability through which they can consider the interpretation of different clinical findings. To interpret the clinical findings clinicians should have biomedical knowledge as well as clinical knowledge. An expert clinician must have critical thinking skill rather than ignore any symptoms or overemphasize the symptoms. Patient's knowledge, believes and reasoning are also an important part of clinical reasoning process. That's why health professionals need to give proper explanation about the disease,

intervention and prognosis. Health care providers also have to be aware about the different reasoning procedure and the utilization of these procedures in terms of diagnosis and selection of management or rehabilitation. Our knowledge has organized into clinical patterns which are based on evidence. We have recognized evidence and used our knowledge, experience, expert opinion, different reasoning procedure for completing the hypothesis of Guillain Barre Syndrome as well as therapeutic management of it. Our consideration is associated with reasoning of other contributing factors such as physical, social and psychological factors. After gathering knowledge about clinical reasoning we have ensured that we had better used our clinical reasoning process (Three Track Reasoning Process) which gave the early and better outcome for the case. If we would not use the reasoning process than it would delay the diagnosis and selection of treatment option which would life threatening for this case as well as restore some disability. Fortunately, these had not happened because of our reasoning process as well as this case has been leading a normal life as earlier. To solve this case we went through the three track reasoning process and have often faced with the limited resources or information. However, it is very difficult to be strict in a single reasoning process. One of the reasons was that we don't have a lot of experience yet. However we have been practicing clinical reasoning in our day to day practice, but we were not conscious about it. That's why we may not critically think about it at the time of dealing with this case. We have found that reasoning process has to be changed whenever faced any trouble. In every literature the different reasoning process has described. But it is very difficult to identify which one is the best. That's why further study is needed by amplifying different reasoning process with a specific case. There should also have comparison study to solve a problem which reasoning is the best one as each reasoning has some good considerations and some limitations also. There should be other research also in which situation which reasoning process should be applied. However in the day to day practice we need to use our clinical reasoning process, so that we might be clear or make a concept about the critical evaluation between these reasoning processes and would be helpful to choose the better option which would be helpful also for our clients.

REFERENCES

1. Evans C, Kakas AC. Hypothetico-deductive Reasoning. *FGCS*. 1992; *546-554.*
2. Cervero RM. Effective continuing education for professionals. Jossey-Bass.1988.
3. Curry L, Wergin JF. Educating Professionals. Responding to New Expectations for Competence and Accountability.1st edi; 1993.
4. Edwards I, Jones M, Carr J, Braunack-Mayer A, Jensen GM. Clinical reasoning strategies in physical therapy. *Phys Ther.* 2004; 84(4):312-330.
5. Higgs J, Jones MA. Clinical decision making and multiple problem spaces. *Clinical Reasoning in the Health Professions* 2008; 1:3-18.
6. Whiteneck GG, Charlifue SW, Gerhart KA, Overholser JD, Richardson GN. Quantifying handicap: a new measure of long-term rehabilitation outcomes. *Arch Phys Med Rehabil.* 1992; 73(6):519-526.
7. Jones M, Edwards I, Gifford L. Conceptual models for implementing biopsychosocial theory in clinical practice. *Man Ther.* 2002; *7*(1):2-9.
8. Simmons B. Clinical reasoning: concept analysis. *J Adv Nurs.* 2010; 66(5):1151-1158.
9. Kuiper RA, Pesut DJ. Promoting cognitive and metacognitive reflective reasoning skills in nursing practice: self-regulated learning theory. *J Adv Nurs.* 2004; 45(4):381-391.
10. Elstein AS, Schwarz A. Clinical problem solving and diagnostic decision making: selective review of the cognitive literature. *BMJ* 2002; 324 (7339):729-732.
11. Jones M. Clinical reasoning and pain. *Man Ther.* 1995; 1(1):17-24.
12. Fleming MH. The Therapist with the Three Track Mind. Am J Occup Ther. 1991; 45(11):1007-1014.
13. Cummins DD, Lubart T, Alksnis O, Rist R. Conditional reasoning and causation. *Memory & Cognition*. 1991; 19(3):274-282.
14. Barrouillet P, Lecas JF. Mental models in conditional reasoning and working memory. *Thinking & Reasoning.* 1999; *5*(4):289-302.
15. Dombale VV, Kumar S. A pilot study to compare between effectiveness of functional mobility and strengthening exercises and strengthening exercises alone in Guillian Barre Syndrome patients. Indian Journal of Physiotherapy & Occupational Therapy. 2012; 6(2):130-134
16. Mattingly C. The narrative nature of clinical reasoning. *American Journal of Occupational Therapy*. 1991; 45(11):998-1005.
17. Fleming MH, Mattingly C. Action and narrative: two dynamics of clinical reasoning. *Clinical reasoning in the health professions* 2000; 2:54-61.

18. "Hamilton TB. Narrative reasoning. Clinical and Professional Reasoning in Occupational Therapy. Philadelphia: Wolters Kluwer Health/ Lippincott Williams & Wilkins, 2008."

Citation
Shamima Islam Nipa, Mohammad Mustafa Kamal Rahat Khan, Mohammad Sohrab Hossain, Mohammad Habibur Rahman, & Md. Shofiqul Islam. (2015). MANAGEMENT OF A GUILLAIN BARRE SYNDROME PATIENT THROUGH THREE TRACK REASONING: A CASE STUDY. *International Journal of Physiotherapy*, 2(6), 1006-1011.