Evolving Trends in Evidence Based Practice: Use of Internet to Retrieve Evidence at Point of Care

Deepa Bhargava,[1] Rashid Al-Abri,[1] Kamlesh Bhargava[2]

From the [1]ENT Division, Department of Surgery, College of Medicine & Health Sciences Sultan Qaboos University, [2]Department of Family Medicine and Public Health, College of Medicine & Health Sciences, Sultan Qaboos University, Muscat, Sultanate of Oman

Received: 05 Jan 2010
Accepted: 28 Feb 2010

Address correspondence and reprint request to: Dr. Deepa Bhargav, ENT Division, Department of Surgery Sultan Qaboos University Hospital, P.O. Box. 38 Al Khod, Muscat 123, Sultanate of Oman. E-mail: deepav@squ.edu.om

Bhargava D, *et al.* OMJ. 25, 145-147 (2010); doi:10.5001/omj.2010.41

Introduction

Clinicians are often faced with dilemmas during day-to-day practice. In the past, most of the dilemmas were resolved by consultations with peers or reference to books. Now however, with the availability of information technology, another dimension has been added to the clinicians armamentarium.

Access to knowledge through the internet has spawned a world of online learning, stimulating a new passion for life-long learning in academia, professional environments, work place and at home.[1]

There is need for evidence-based knowledge in terms of healthcare. Most physicians and surgeons require more information, and are often faced with clinical dilemmas and differences of opinions.

A study conducted in the US showed that 49% of physicians felt that a lack of knowledge about the medical aspects of certain cases was the main cause of errors by family physicians.[2] In another study, it was found that physicians had two questions for every three patients they had seen, and that 40% of clinical questions raised in patient consultations were on medical facts.[3] It was also found that family physicians do not pursue answers to 64% of their clinical questions, but with those who pursued for answers, they found answers for 80% of questions.[4]

This report demonstrates how the internet can help in Evidence based practice by solving clinical dilemmas, resolving differences of opinion, and ultimately improve the patient management outcomes, standards of care and has proved to be very educational.

Two scenarios are presented in this report. Firstly, a common condition of Benign Paroxysmal Positional vertigo (BPPV) presented in a busy ENT outpatients department. And secondly, a very rare serious and potentially fatal condition in a child presented with cerebral Sino venous thrombosis secondary to masked mastoiditis in the inpatient ward.

Evidence based practice was implemented at the point of care in a busy outpatients department and in the wards during inpatient rounds.

Both scenarios were presented in a tertiary care teaching hospital. This report illustrates how after identifying a knowledge gap in clinical dilemmas, searching the internet for the answers in real clinical time and applying the evidence obtained ultimately led to improved patient outcomes, and improved standard of care , but most importantly, the internet proved to be a very useful learning tool.

First Scenario

An anxious 38 year old female working as a university lecturer was presented to the ENT clinic with a 4 week history of recurrent episodes of vertigo. She complained of 1-4 episodes per day, lasting approximately one minute, however, she also had symptom-free days in between. The vertigo was triggered by change in head position particularly while turning in and getting up from bed. The patient also felt that the attacks were provoked on looking up and down.

There was no history of nausea and vomiting. The Dix Hallpike test was performed by a neurologist, and a diagnosis of BPPV was made. The patient was then referred to the ENT clinic for Epleys Manoeuvre.

There were four clinical dilemmas, namely; 1)what is the exact procedure of the Dix Hallpike maneuver? 2)Reliability of Dix Hallpike maneuvers in diagnosing BPPV?, 3) Effectiveness of Epelys maneuver in patients with BPPV as compared to no treatment, and 4) What is the exact procedure of Epelys maneuver?

An internet search was performed in real time at the point of care, and the dilemmas were solved while the patient was with the nurses for blood pressure measurement to rule out orthostatic hypotension. The strategy of the search was to identify how to perform the Dix Hallpike maneuver? The method of Dix Hallpike test was downloaded from the internet in 25 seconds through Google using the search term "Dix Hallpike test method."[5] Video images of the test were accessed which were self explanatory and easy to follow. The other strategy for searching the internet was to assess the reliability of the Dix Hallpike maneuvers in diagnosing

BPPV.

The accuracy and reliability of diagnostic tests used Clinical Queries in Pubmed. The terms "Reliability" AND "Dix Hallpike maneuver" AND (BPPV OR benign paroxysmal positional vertigo) were used. Four articles were retrieved and the articles which mentioned that "Dix Hallpike maneuver is the gold standard for diagnosing BPPV" were selected.[6] The authors concluded that "A normal horizontal gain or vertical phase lead on vestibular autorotation testing in a vertiginous patient is suggestive of but not exclusive to a diagnosis of BPPV." Adjuvant use of these parameters in vestibular autorotation testing may prove to be helpful in the diagnosis of BPPV. The combination of a normal horizontal gain and vertical phase lead on vestibular autorotation testing is highly suggestive of the diagnosis of BPPV. A normal horizontal gain is 85% sensitive but only 36% specific for BPPV. Patients with BPPV were 1.9 times more likely to have vertical phase lead (95% CI=0.95-3.93). Patients with BPPV were 2.20 times more likely to have both normal horizontal gain and vertical phase lead (95% CI=1.03-4.69). The sensitivity of the combination of normal horizontal gain and vertical phase lead on vestibular autorotation testing is 87% specific but only 25% sensitive in the diagnosis of BPPV.[6] The time taken to retrieve and scan this information was 3 minutes excluding the time taken to critically appraise the article. Dix Hallpike test was performed on the patient, the patient was then seated, Frenzels glasses were used, the neck was extended and turned to one side, and the patient was then rapidly placed supine with her head hanging over the edge of the bed. The head was maintained in this position for 30 seconds. Nystagmus was observed. The patient was then brought back to sitting position and nystagmus was again observed. The procedure was repeated with the head turned to other side. Dix- Hallpike was found to be positive in the right side. Based on the results, the patient was diagnosed with right posterior canal BPPV.

It was also important to establish whether the Epleys Maneuver helps patients with vertigo due to BPPV or whether the patients just spontaneously recover. At this point, the diagnosis of right posterior canal BPPV had been confirmed. Thus the five steps of Evidence Based practice i.e. Ask, Acquire, Appraise, Apply and evaluate performance were applied.

In a 37 year old female with BPPV secondary to right posterior canal involvement, was Epleys maneuver more effective than pharmacological intervention for relieving the symptom of vertigo.

A search for systematic reviews on clinical queries in pubmed was performed using the terms "Epleys maneuver" AND "BPPV OR benign paroxysmal positional vertigo." One systematic review was retrieved from the Cochrane library in 40 seconds.[7] The conclusions were read in just one minute. 11 trials were identified and reviewed in this systematic review, but due to a high risk of bias, nine studies were excluded because of inadequate concealment during randomization, and failure to blind outcome assessors, leaving only two trials for the review. The authors concluded that there is evidence that the Epleys Manoeuvre is a safe and effective treatment for posterior canal BPPV.

Since Epleys maneuver had already been appraised by the systematic review,[7] the evidence was then applied to the patient.

The method for conducting the Epleys maneuver was searched in pubmed clinical queries, however, the information was not available. Therefore, a Google search using the terms "Epley method" was generated and the images were searched. In 0.35 seconds, the following website showed a complete diagram of Epleys canalith repositioning method which was then adopted: http://www.dizziness-and-balance.com/disorders/bppv/bppv.html

The Epleys maneuver was performed. However, when the Dix Hallpike test was repeated, the results observed were negative. Therefore, it was not clear whether it was a true negative or the negative test was due to fatigability.

Three days after the Epely's maneuver, a subjective evaluation revealed that the patient had complete freedom from vertigo, however, an objective evaluation using the Dix Hallpike test was negative.

To assess the effectiveness over time, the patient was asked to keep a record of episodes of BPPV. She was also advised to do a modified version of Epely's maneuvers. She was advised follow up 4 weeks later which was not accomplished. Seven months later, she was contacted for follow up by phone, she reported of approximately three episodes after discharge. She also mentioned that she performed a modified Epleys called the "barbeque reposition" in which she rolled over the carpet on the floor and it gave her relief and prolonged the symptom-free intervals. The patient found this very simple and effective procedure by herself using the internet. She also reported of being free of vertigo for the past six months.

Following this experience, it became routine to depend on the Dix-Hallpike test to diagnose BPPV and Epleys maneuvers to treat these cases successfully. The total time taken for retrieving the information for the above dillemas was less than 3 minutes, although going through the data may have take longer.

Second Scenario

The ENT on call team was requested to evaluate an 8 year old child admitted to the A/E department with neurologic features of right 6th cranial nerve palsy and meningeal irritation. The

child was previously healthy and had been transferred from the peripheral health center. On ENT clinical evaluation, there was no previous history of ear or para nasal sinus infection. Moreover, other than a dull right tympanic membrane, clinical examination revealed normal ENT. The initial clinical impression was no obvious primary ENT cause leading to intracranial complications.

On the next morning during inpatient round, the ENT team was informed that radiological investigations had revealed right transverse and sigmoid sinus thrombosis with mastoiditis. The five steps of practicing evidence based medicine as described above were applied to the case scenario.

Three references describing case reports in children with masked mastoiditis leading to serious intracranial complications were obtained.[8-10] Subsequently, the child was successfully treated and she fully recovered with no sequels.

Conclusion

Clinical decision making in common and uncommon conditions can be greatly enhanced by the availability of the internet at the point of care and this involves familiarity with the principles of Evidence based practice.

Acknowledgements

The authors reported no conflict of interest and no funding was received on this work

References

1. Sedory Holzer SE. Internet platform for life long learning: A continuum of opportunity. In: Otolaryngologic clinics of north america. 2007. p. 1275-1293.
2. Ely JW, Levinson W, Elder NC, Mainous AG III, Vinson DC. Perceived causes of family physicians' errors. J Fam Pract 1995 Apr;40(4):337-344.
3. Covell DG, Uman GC, Manning PR. Information needs in office practice: are they being met? Ann Intern Med 1985 Oct;103(4):596-599.
4. Ely JW, Osheroff JA, Ebell MH, Bergus GR, Levy BT, Chambliss ML, et al. Analysis of questions asked by family doctors regarding patient care. BMJ 1999 Aug;319(7206):358-361.
5. Dix MR, Hallpike CS. The pathology, symptomatology and diagnosis of certain common disorders of the vestibular system. Ann Otol Rhinol Laryngol 1952 Dec;61(4):987-1016.
6. Belafsky P, Gianoli G, Soileau J, Moore D, Davidowitz S. Vestibular autorotation testing in patients with benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg 2000 Feb;122(2):163-167.
7. Hilton M, Pinder D. The Epley (canalith repositioning) manoeuvre for benign paroxysmal positional vertigo. Cochrane Database Syst Rev 2002;(1):CD003162.
8. Liu YH, Qin Y, Wang QG, Zhong Z, Wang J, Xiao SF. Managements of masked mastoiditis. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi 2006 Mar;41(3):191-194.
9. Fukuda T, Sugie H, Ito M, Kikawada T. Bilateral facial palsy caused by bilateral masked mastoiditis. Pediatr Neurol 1998 Apr;18(4):351-353.
10. Kuczkowski J, Dubaniewicz-Wybieralska M, Przewoźny T, Narozny W, Mikaszewski B. Otitic hydrocephalus associated with lateral sinus thrombosis and acute mastoiditis in children. Int J Pediatr Otorhinolaryngol 2006 Oct;70(10):1817-1823.