ORIGINAL ARTICLE

Current status of beta-blockers in non-cardiac diseases in a Tertiary Level Hospital

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Abstract :

Background: Beta-blockers are among the proven medications in cardiovascular Medicine and in non-cardiac disorders either as preventive or curative medicine. **Aim & Objectives:** To see the pattern of using Beta blockers in non-cardiac diseases. **Material and methods:** Cross-sectional, descriptive study conducted in the Department of pharmacology in collaboration with the Department of cardiology and Medicine in Mymensingh Medical College Hospital, Mymensingh. **Result:** A total of 300 patients were selected non-randomly for the study. In this particular study, where total 300 patients received beta-blockers in case of cardiac and non-cardiac disorders, 87.7% were cardiac patients with cardiovascular co-morbidities. 12.3% patients had non-cardiac disorders. In case of non-cardiac disorder, out of 37 participants, 40% of them were suffering from migraine, which was highest among all other non-cardiac disorders. Drug used in non-cardiac disorders was non-selective beta-blocker propranolol. **Conclusion:** It is concluded that in non-cardiac disorders, Beta-blocker is one of the most common medicine. In case of non-cardiac disorders, majority of them were suffering from migraine, which is highest among all other non-cardiac disorders.

Key-words: Non-cardiac disorder, Beta-blocker, Migraine, Anxiety, Thyrotoxicosis.

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Introduction:

The invention of beta β-blockers culminated in a new era in the treatment of cardiovascular diseases (CD), and changed the course of pharmacology research for years to come. Since the introduction of propranolol into clinical practice in 1964, β-blockers enjoyed a special place in the clinicians' armamentarium against CDs, especially for patients with ischemic heart diseases, and are still one of the most extensively used therapeutic drugs in non-cardiac ailments. Current uses of β-blockers in non-cardiac uses include glaucoma, migraine, situational anxiety, benign essential tremors and cardiac symptoms of thyrotoxicosis.[1] Preventive treatments of migraines include medications, nutritional supplements, lifestyle alterations and surgery. Prevention is recommended in those who have headache more than two days a week, cannot tolerate the medications used to treat acute attacks, or those

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with severe attacks that are not easily controlled.[2] Preventive migraine medications are considered effective if they reduce the frequency or severity of the migraine attacks by at least 50%[3]. The use of propranolol for anxiety disorders accompanied by physical symptoms, especially cardiovascular complaints, may be effective in some patients when combined with benzodiazepines. The propranolol may provide symptomatic relief in some patients with residual somatic complaints (i.e., palpitations and tachycardia), when combined with the patient's ongoing drug regimen.[4] Patients experiencing thyrotoxicosis (thyroid storm), or symptomatic hyperthyroidism, can experience a number of effects that can include tachycardia, palpitations, tremor or nervousness.[5] Propranolol, a non-selective beta-1 and beta-2-blocker, is frequently used to help treat this condition. Propranolol will not only help control the symptomatic tachycardia and tremors associated with thyroid storm, but there is also data that shows propranolol may also be known to inhibit the monodeiodinase type I enzyme responsible for conversion of T^4 to the more biologically potent T^3 hormone.[6]

Methodology:

It was a cross-sectional descriptive study. This study was carried out in the department of pharmacology in collaboration with department of Cardiology and Medicine in Mymensingh Medical College Hospital. The study was conducted in a period of one year from July 2016 to June 2017. Total 300 patients were included.

Inclusion Criteria:

Patient with age group more than 20 years, Beta-blocker used in non-cardiac diseases.

Exclusion Criteria:

Subject with pregnancy, Subject with hepatic disease.

Sampling technique:

Non-Random purposive sampling.

All outdoor patients fulfilling the inclusion criteria were studied. All data was collected from outdoor patients. Data was also collected from the patients by questionnaire. All findings regarding non-cardiac diseases were recorded and analysed. The collected data were checked and edited first and then processed with the help of software SPSS (Statistical package for social sciences) version 21 and analysed.

Results:

Table 1: Beta blocker prescribed in cardiac and non –cardiac diseases

Beta blocker	Number of patients	Percentage (%)
Cardiac	263	87.7
Non-cardiac	37	12.3
Total	300	100

Observation and result:

Beta blocker prescribed in cardiac diseases is about 87.7 %. In case of non-cardiac diseases, the percentage is 12.3 %.

Table 2: Non cardiac disorder among study participants

Non cardiac disorder	Number of patients	Percentage (%)
Migraine	15	40.6%
Anxiety neurosis	10	27.0%
Thyrotoxicosis	12	32.4%
Total	37	100%

Observation and result:

Among 300 participants 37 patients had non-cardiac disorders. Out of 37 patients, 40.6% had migraine, 32.4% was suffering from Thyrotoxicosis and only 27% had Anxiety neurosis.

Table 3: Beta-blocker used in different non-cardiac disorders

Non-cardiac disorders	Name of drugs
Migraine	Propranolol
Anxiety neurosis	Propranolol
Thyrotoxicosis	Propranolol

Observation and result:

Among 300 participants 37 patients had non-cardiac disorders. Non-selective beta-blocker, propranolol is used in all non-cardiac disorders.

Discussion:

The use of beta-blockers in clinical practice has been evolving for more than half a century. Currently, these medications are used for a number of medical conditions such as unstable angina (USA), acute myocardial infarction (AMI), heart failure (HF), hypertension (HTN), atrial fibrillation (AF), ventricular arrhythmias, migraine headache, hyperthyroidism, essential tremor etc.[7] This study revealed propranolol is used for migraine headache which coincides with Shukla.[8,9] on 2010, where propranolol considered as 1st line drugs for migraine prophylaxis. Rabkin[10] in a study in 1966 found the therapeutic effect of propranolol for migraine headache. Since then, several studies have been conducted wherein propranolol was found to be safe and effective in managing migraine headache.[11,12,13,14] In another study Holroyd[15] in 1991 evaluate the effect of propranolol on migraine. In case of Anxiety neurosis this study showed use of propranolol. Similarly, according to Mealy[16] in 1996 in a study, anxiety and depression scores were significantly lower in the propranolol group. Another study done by Khadke[17] in 2012 showed that anxiolysis scores improved by using propranolol. Wiersinga[18] on 1991 reported that propranolol has effects relieving the troublesome symptoms of hyperthyroidism. Present study also observed the use of beta blocker in case of Thyrotoxicosis.

Conclusion:

It is concluded that beta - blockers are one of the most common forms medicine used for non - cardiac disorders in tertiary level hospital practice. Majority of the non-cardiac patients were treated with non-selective beta - blocker. Among non-cardiac disorder, migraine was found to be the commonest disorder treated with beta- blocker. Propranolol, a non-selective beta-blocker was prescribed for all non-cardiac outdoor patients.

References:

1. Shahid Akbar, MD, PhD and Mohammad S. Alorainy, BSc Pharm, Pharma. From the Department of Pharmacology and Toxicology (Akbar), College of Pharmacy. Saudi Med J 2014; 35(11): 1307-1317.
2. Gilmore, B, Michael, M (2011-02-01) "Treatment of acute migraine headache". American family physician 83(3):271-80.
3. Kaniecki R, Lucas S (2004). "Treatment of primary headache: Preventive treatment of migraine". Standards of care for headache diagnosis and treatment. Chicago: National Headache Foundation. PP. 40-52.
4. www.jad-journal.com/article/0165-0327(87)900176/references. Correspondence information about the author Peggy E. Hayes, S.Charles Schulz, American Psychiatric Association, Washington, DC; 1987 (DSM-III-R). Pennigroth, R.P., Woolson, R.F. Propranolol in the treatment of anxiety neuros.
5. Berry MJ, Larsen PR. The role of selenium in thyroid hormone action. EndocrRev 1992; 13:207-19.
6. Wiersinga WM, Touber JL. The influence of beta-adrenoreceptor blocking agents on plasma thyroxine and triiodothyronine. J ClinEndocrinol-Metab 1977; 45:293-8.
7. Schellenberg R, Lichtenthal A, Wohling H, et al. Nebivolol and metoprolol for treating migraine: An advance on beta- blocker treatment. Headache 2008;48:118-125.
8. Shukla R, Sinh M. Migraine: Prophylactic treatment. J Assoc Physicians India 2010; 58(Suppl):26.
9. Silberstein SD, Holland S, Freitag F, Dodick DW, Argoff C, Ashman E, et al. Evidence-based guideline update: Pharmacologic treatment for episodic migraine prevention in adults: Report of the quality standards subcommittee of the American Academy of Neurology and the American Headache Society. Neurology 2012; 78:1337- 45.

10. Rabkin R, Stables DP, Levin NW, Suzman MM. The prophylactic value of propranolol in angina pectoris. Am J Cardiol 1966; 18:370 - 83.
11. Borgesen SE, Nielsen JL, Moller CE. Prophylactic treatment of migraine with propranolol. A clinical trial. Acta Neurol Scand 1974; 50:651- 6.
12. Diamond S, Kudrow L, Stevens J, Shapiro DB. Long-term study of propranolol in the treatment of migraine. Headache 1982; 22:268 -71.
13. Rosen JA. Observations on the efficacy of propranolol for the prophylaxis of migraine. Ann Neurol 1983; 13:92 - 3.
14. Wideroe TE, Vigander T. Propranolol in the treatment of migraine. Br Med J 1974; 2:699 - 01.
15. Holroyd KA, Penzien DB, Cordingley GE. Propranolol in the management of recurrent migraine: A meta-analytic review. Headache 1991; 31:333 - 40.
16. Mealy K, Ngeh N, Gillen P, Fitzpatrick G, Keane FB, Tanner A, et al. Propranolol reduces the anxiety associated with day case surgery. Eur J Surg 1996; 162:11- 4.
17. Khadke VV, Khadke SV, Khare A. Oral propranolol – Efficacy and comparison of two doses for peri-operative anxiolysis. J Indian Med Assoc 2012; 110:457 - 60.
18. Wiersinga WM. Propranolol and thyroid hormone metabolism. Thyroid 1991; 1:273 -7.