Original Article

A survey on the line of management of myocardial infarction patients by the primary health care physicians in Puducherry

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Myocardial Infarction (MI) is the common cause of the mortality globally. If prompt treatment/referral is initiated within 90 minutes of development of infarction, the mortality rate can be minimized almost to 3%. Whenever patients develop any acute illness including chest pain, they usually attend the clinic of family physician first that are easily accessible to them. Therefore the role of family physician in management of MI is very significant. Hence a survey based on a validated questionnaire was conducted among general practitioners of Puducherry. It was observed from the survey that 93% of family physicians are aware of the importance of early administration of aspirin as a prehospital medication. However about 41% of physicians informed that they use enteric coated aspirin and not soluble aspirin. With regard to referring the patient for catheterization laboratory, 58% of physicians only felt that 3 hours as a maximum period. Only 21% of physicians preferred to use morphine as analgesic while the rest suggested drugs such as tramadol, diclofenac, aspirin, pentazocine, paracetamol and pethedine as alternatives to morphine. Most of physicians felt that non availability of morphine is due to stringent regulations and it is the main reason for not using the same. Streptokinase was preferred thrombolytic for 29% of physicians and tenecteplase was preferred by 35%.

From our present survey we feel that continuing medical education programs on MI pertaining to use of analgesics, referral time limit to Primary Percutaneous coronary intervention (PPCI) and use of most effective thrombolytic may be organized for primary care physicians so that timely management by them can reduce the mortality in MI significantly.

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Myocardial infarction (MI) is the common cause of mortality globally. A survey reveals that during the past few years the incidence of MI has reduced in western countries but an increase in the same in developing countries especially in India[1]. It has been documented beyond doubt that as much as 25% of patients who had MI die before reaching the tertiary health care centre. Therefore the present slogan of cardiologists with regard to manage-ment of MI is "Time is Myocardium". If prompt treatment/ referral are initiated within 90 minutes of the development of infarction, the mortality rate can be minimized almost to 3%[2]. Whenever patients develop any acute illness including MI, they attend the clinics of family physicians first that are easily accessible to them. Hence, the role of family physicians in the management of MI is very significant. Appreciating the value of time and having an updated knowledge of management of MI, they can make immediate referral and save lives of MI patients.

Many times the family physicians are mislead by the wrong history provided by the patients that their spicy food might attribute to indigestion leading to the chest discomfort. Apart from this, any patient with chest pain should have an ECG which can mostly diagnose MI. Unfortunately, most of the patients are reluctant to undergo ECG test and request the family physicians to treat them with some injection emperically and inform them that they will come with ECG report next day morning. Unfortunately a significant proportion of these patients die before they could come for the next day to meet the family physician. Thus the family physicians to some extent are responsible for delay in treatment of MI. Hence, a duty is cast on fam-

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ily physicians to compel these patients to take ECG immediately which is affordable and easily accessible. It is also important that the treating family physicians should have knowledge of diagnosing MI from ECG so that they can initiate appropriate management. Unless they are aware of the update in management of MI such as immediate thrombolysis, angiogram followed by angioplasty, they may not be in a position to refer the patients in appropriate time. It was felt that a survey should be conducted on the line of management of MI by the primary health care physicians and hence the present survey has been undertaken.

MATERIALS AND METHODS

A cross sectional survey was conducted with a validated questionnaire among family physicians of union territory of Puducherry from 20th January 2013 to 20th September 2013. The questionnaire was administered to 84 practicing family physicians randomly selected across Puducherry.

The salient features of the questionnaire included the information regarding:

• First line medication to be prescribed by them for suspected MI

• Use of morphine / alternate drug to morphine

• Use of aspirin and formulation of aspirin used

• Familiarity with ECG findings of MI

• Knowledge of latest treatment of MI

The practicing physicians were explained about the purpose of the study and informed consent was obtained. They were requested to complete the questionnaire and return it immediately. The data were analyzed and presented in the results.

RESULTS			
No	Questions	Responses	Percentage
1	If a patient with chest pain suspected as MI comes to your clinic, the first line of medication that you would prescribe before referring to a speciality centre.	Aspirin alone	16.66 %
		Aspirin + clopidogrel	11.90 %
		Aspirin+clopidogrel+statin	23.80 %
		Aspirin + nitrate	26.19 %
		Nitrate alone	16.66 %
		Morphine alone	4.76 %
2	Is morphine used in your clinic for acute MI	Yes	21.42 %
		No	78.57 %
3	If NO , alternate analgesic used in your clinic	Aspirin	24.24 %
		Tramadol	30.30 %
		Diclofenac	24.24 %
		Pentazocine	6.06 %
		Paracetamol	9.09 %
		Pethidine	6.06 %
4	Reason for non stocking of morphine in your clinic	Non availability	47.61 %
		Abuse / misuse	14.28 %
		Narcotic drug	9.52 %
		Legal issues	11.90 %
		Toxicity and side effects	4.76 %
		Don't want to take risk	2.38 %
		No response	9.52 %
5	Is Aspirin used in your clinic for acute MI	Yes	92.85 %
		No	7.14 %
6	If ,YES the type of Aspirin used	Soluble	58.97 %
		Enteric coated	41.02 %
7	Familiar with ECG findings of MI	Yes	90.47 %
		No	9.52 %
8	In case you are referring the patients mention the advice that you will give	Reassurance	14.28 %
		Immediate referral to a higher centre	47.61 %
		Aspirin	9.52 %
		Sublingual nitrates	9.52 %
		Oxygen therapy	14.28 %
9	In your opinion the latest treatment for MI is	Immediate thrombolysis with streptokinase	28.57 %
		Coronary angiogram followed by angioplasty in a nearby cardiac centre	33.33 %
		Referral to a corporate hospital with all facilities irrespective of distance	3.57 %
		Immediate thrombolysis with Tenecteplase	34.52 %
10	In your opinion what is the maximum period for the referral of patient to catheterization laboratory for angiography followed by angioplasty.	Within 3hours of the attack	58.33 %
		Within 6 hours of the attack	29.76 %
		Within 12 hours of the attack	9.52 %
		Within 24 hours of the attack	1.19 %

DISCUSSION

The results reveal that 16.66 % of the family physicians preferred aspirin as first line medication for patients highly suspicious of MI. The choice to add clopidogrel along with aspirin was 11.90 %, nitrates with aspirin was 26.19% and clopidogrel and statins with aspirin were 23.80%. In all the three regimans aspirin found a place. Only 4.76 % of physicians preferred morphine alone where as 16.66 % preferred nitrates alone. It has been observed and suggested that administration of aspirin alone within 3 hours of occurrence of MI reduces the mortality rate in MI by 23%[3] and it is considered that the effect of timely administration of aspirin (which costs less than 50 paisa) is almost equal to the effect of streptokinase (which costs about not less than Rs 2,500 per vial). It is interesting to note that more than 75 % of physicians wanted to include aspirin as a primary drug with various combinations indicating their awareness of the life saving value of aspirin in management of MI.

With regard to use of morphine for MI patients in the clinic, 21.42 % of physicians informed that they use morphine and the remaining 78.57 % are not. The main reason for not using morphine by majority of physicians is essentially identified as non availability of morphine. Their prescriptions are not honoured. In addition to this, they don't want to face legal issues in view of the fact that the drug comes under the classification of narcotic and psychotropic substances. It is unfortunate that even though morphine is the most effective analgesic and by relieving pain it reduces the sympathetic activity, a vital role in management of MI, the patients are deprived of the benefits of morphine due to stringent drugs act. Hence, it is strongly felt that modalities to make morphine available to the primary care physicians requires immediate attention and should be considered as top priority by the drug controlling authorities. We also feel that national bodies like Indian Medical Association and Association of Physicians of India can address this issue to benefit the patients from excruciating severe pain of MI. It is heartening to note that a bill is likely to be passed in Loksabha for removing "out dated restriction on the use of morphine" as appeared in the editorial column of "The Hindu" dated 23rd august 2013.

In view of non availability of morphine as mentioned above, 30.30% of physicians preferred to use tramadol as an alternative analgesic. Tramadol is being used now as an alternative to morphine for treatment of post traumatic pain[4] but its safety of use in acute MI is not yet clearly known. Pentazocine was preferred by 6.06 %. Similar percentage of physicians preferred pethidine. However, pethidine is also not easily available. Further use of pentazocine in acute MI is not advised, as the hemodynamic effect of pentazocine make it unsuitable for use in MI.

Surprisingly 24.24 % of family physicians informed they use aspirin as alternative analgesic to morphine. Aspirin acts as analgesic at an ulcerogenic dose of 0.5 to 1gm. It acts as an anti platelet agent at a dose of 150 to 300 mg. If it is given in higher dose its anti platelet property may be lost and the purpose of using it in MI becomes meaningless. Further its analgesic potency cannot be compared with morphine to be used in MI. Injection diclofenac was chosen as alternative analgesic to morphine by 24.24% of physicians. Diclofenac is a non steroidal anti inflammatory drug useful in musculoskeletal pain and not in severe visceral pain; further the drug itself may reduce the anti platelet activity of aspirin. Moreover, patients with MI will be exposed to maximum stress leading to peptic ulcer. Diclofenac per se can either induce or potentiate the ulcer. The above discussed data warrants an urgent need for updating the analgesic use in MI by the family physicians.

Regarding the type of formulation of aspirin used for MI, 58.97% of physicians informed that they are using soluble aspirin while 41.02% are using enteric coated aspirin. As already pointed above, timely administration of aspirin reduces the mortality in MI significantly. For this purpose only soluble aspirin which dissolves immediately has to be given so that it can be absorbed rapidly. In contrast, if enteric coated aspirin is used it might take minimum 3-4 hours for absorption and to reach effective concentration in plasma[5,6]. Hence, the practicing family physicians should be aware of the differences in the absorption of these two preparations of aspirin and prescribe accordingly.

It is good to note that 90.47% of practicing physicians are familiar with the ECG finding of MI, as ECG is the most effective, simple, and cost effective investigation for guiding on the line of management of suspected chest pain.

On analyzing the advice given by practicing physicians at the time of referral, 47.61% preferred immediate referral to higher centre. While 9.52% opined that tab. Aspirin should be given pre hospitably, reassurance to the patient as a psychological support was insisted by 14.28% of physicians only. Needless to say that the psychological support to patients who are under high stress will definitely improve the prognosis and the family physicians should be made to realize the importance of psychological support in time of crisis.

Reperfusion therapy in the form of primary percutaneous coronary intervention (PPCI) has become the gold standard for treatment of acute MI[7]. As "Time is Myocardium" in the management of MI, timely referral to appropriate centre is eminent. Further, PPCI performed within 3 hours gives excellent results and PPCI performed after

3 hours has not yielded gratifying results. PPCI performed after 12 hours is of doubtful value. In the present survey, only 33.33% of the family physicians favored PPCI; thrombolysis with streptokinase was considered as the latest treatment by 28.57%. Only one primary care physician was of the opinion that patient to be referred to a corporate hospital with excellent facilities for cardiac surgery, irrespective of distance.

The suggested guideline in country like India on the management of MI is as follows: where facilities available to transport the patient within 3 hours to catheterization laboratory, patient should be referred for PPCI. If no such facilitates are available, immediate thrombolysis with tenecteplase should be preferred modality of treatment now. Streptokinase is widely used now in India for thrombolytic therapy; however occluded infarct related arteries had opened in 31% of patients only who were treated with streptokinase, where as the percentage was 62% in case of tenecteplase[8]. Further tenecteplase was found to be more efficacious than streptokinase in preventing cardiogenic shock which is a serious complication of MI[9]. On the other hand, one vial of tenecteplase costs around Rs 30,000 in contrast to streptokinase which costs around Rs 2,500 only. However MI is a killer disease and when life is lost by MI, it is not the loss of single individual but the whole family suffers especially when the victim is the bread winner of the family. Hence on considering the family as a whole there should be no hesitation to use tenecteplase especially when facilities for PPCI are not available. In the present study only 34.52% of the physicians felt that tenecteplase should be the latest treatment.

In the management of MI, the family physicians should be aware of the fact that patient should be referred within 3 hours of the attack of MI to a nearby cardiac centre with catheterization laboratory facilities and not to a corporate hospital with all modern facilities but situated some 300 to 400kms away which takes about not less than 5 to 6 hours of travel to reach the hospital. It is good to note that except one family physician all others in the study were thinking on these lines.

It is estimated that PPCI is available in <25% of hospitals even in USA[10]. These facilities may be available in < 10% of hospitals in India. Under these circumstances it appears that in India thrombolytic treatment despite its short coming is the preferred initial therapy.

The thrombolytic agents available are streptokinase and recombinant tissue-type plasminogen activator (rtPA) such as alteplase and tenectaplase. As already mentioned, compared to other thrombolytic agents streptokinase is least costly (approximately Rs 2,500) but clot dissolution occurs more promptly with tenecteplase and alteplase[11]. Further it has lower incidence of bleeding and mortality rate compared to streptokinase[12]. The cost of tenecteplase is around Rs 30,000. On the contrary, the cost of alteplase is around Rs 90,000. Alteplase and streptokinase must be given through continuous IV infusion for 90 minutes and 60 minutes respectively which need supervision by an experienced physician, where as tenecteplase is given as 5 second IV bolus[13]. Tenecteplase has even been suggested as a pre-hospital thrombolytic agent by primary health care physicians[14]. The present survey revealed that only 34.52% of physicians are aware about the use of tenecteplase for immediate thrombolysis and its ease of administration.

With regard to maximum period of time to refer to a catheterization laboratory, 58.33% of physicians opted within three hours, 29.76% opted within 6 hours, and 9.52% opted within 12 hours. Only one physician was on the opinion that 24 hours is maximum time. Now it is well established that patients with MI should have PPCI within 90 minutes of arrival to the hospital to get maximum benefit[15]. Further timely reperfusion therapy has shown that long-term mortality rate in patients with MI is 15.4% when reperfusion therapy is started within 60 minutes and this mortality doubles to a rate of 30.8% when the reperfusion therapy is started after more than 180 minutes[16]. Hence, we feel that training programs may be arranged for family physicians focussing the value of time in management of MI.

It is worth mention here that the first author of this article, while working as duty physician in intensive coronary care unit of government hospital, one patient with MI was brought by his wife. She requested with tears to save life of her husband as she just came from a private hospital where she was asked to pay Rs 30,000 for an injection which has to be given immediately to save the life of her husband. Unable to pay the money immediately, the hospital doctors advised her to take her husband to a government hospital and she brought her husband here. We cannot find fault with private hospitals for their strict behavior as apart from doing service, they have to survive as well. With a heavy heart it is to note that most of government hospitals do not have a stock of tenecteplase but only streptokinase is available as an inferior alternative to tenecteplase. Under the current treatment scenario, we strongly suggest that tenecteplase should be kept stocked in all government general hospitals not minding the cost, on considering that loss of one life will be suffering to entire family and when the family suffers it is ultimately a suffering and burden to the nation.

CONCLUSION

Family practitioners play a major role in early management of acute MI. Most of the patients consult the family physicians first since they usually know them well. The family physicians should be able to suspect acute MI and

diagnose from ECG and initiate early treatment/ referral, so that lives of many patients may be saved. Proper advice and correct timely directions certainly can reduce the mortality and morbidity in MI. Our present survey revealed that though the family physicians are well versed with the ECG, an important investigation, awareness program pertaining to use of analgesics, referral time to PPCI, use of correct thrombolytic- as a whole on the current strategies of management of MI be organized. Professional bodies like Indian Medical Association, Association of family physicians, Government general hospitals and corporate cardiac centers can play a major role in updating the knowledge of family physicians by arranging continuing medical education and refresher courses, which is the need of the hour.

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