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Diagnosis and management of hypertension in young adults

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Abstract

Total population of India as per 2011 census was 1.2 billion. India being a young country, out of this 1.2 billion people 32% are young adults (384 million). Young adults are generally referred to age group from 20-39 years. Overall prevalence for hypertension in India is 29.8%. Assuming 30%, that means that 11 crores of young Indian's might have hypertension.

Increased arterial stiffness due to RAAS activation and increased sympathetic overactivity due to stress have been implicated as primary factors for the same. Our study was an observational prospective cross-sectional study. The target approach for the study was 430.

All the newly diagnosed patients, previously diagnosed patients and patients of hypertension with comorbidities were included and were in the age group of 18-40 years. Among the 430 patients 123 were hypertensive (28.60%) whereas 277 (71.40%) were normotensive.Amongst the 123 hypertensive patients 44 were newly diagnosed whereas 79 were previously diagnosed. The present study points out that 28.60% of the young adult patients were hypertensive. Which is quiet a big proportion. In this study approx. one third of the patients were newly diagnosed and rest of the two third were previously diagnosed with hypertension.

For the treatment point of view angiotensin receptor II blockers (ARBs) and calcium channel blockers (CCBs) were the most prescribed monotherapy antihypertensive drugs and proves to be the best option. Telmisartan proves to be the preferred option for patients with T2DM mostly because of their synergistic actions.

Keywords: Hypertension,American Heart Association,Diabetes Mellitus,Chronic Kidney Disease,Dyslipidemia

Introduction

Total population of India as per 2011 census was 1.2 billion. India being a young country, out of this 1.2 billion people 32% are young adults (384 million). Young adults are generally referred to age group from 20-39 years. Overall prevalence for hypertension in India is 29.8% [(1).]

Assuming 30%, that means that 11 crores of young Indian's might have hypertension. Only 12% of Indians with Hypertension have their Blood Pressure in control. [(2)] In India first heart attacks and strokes occur a decade earlier on average.

Increased arterial stiffness due to RAAS activation and increased sympathetic overactivity due to stress have been implicated as primary factors for the same.Uncontrolled blood pressure is one of the main risk factors for cardiovascular diseases (CVDs) such as heart attacks and stroke and globally are the most common cause of death and disease. CVDs are also responsible for one-third of total deaths in India. [(3)]

Materials & Methods

Our study was an observational prospective cross-sectional study.The target approach for the study was 430.

All the newly diagnosed patients, previously diagnosed patients and patients of hypertension with comorbidities were included and were in the age group of 18-40 years.

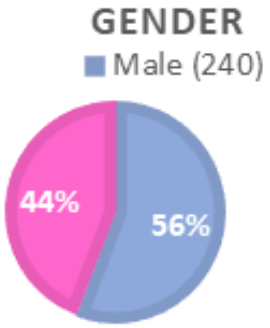
The diagnostic criteria being Blood Pressure (SBP/DBP) > 140/100mmHg (Grade II)

Results

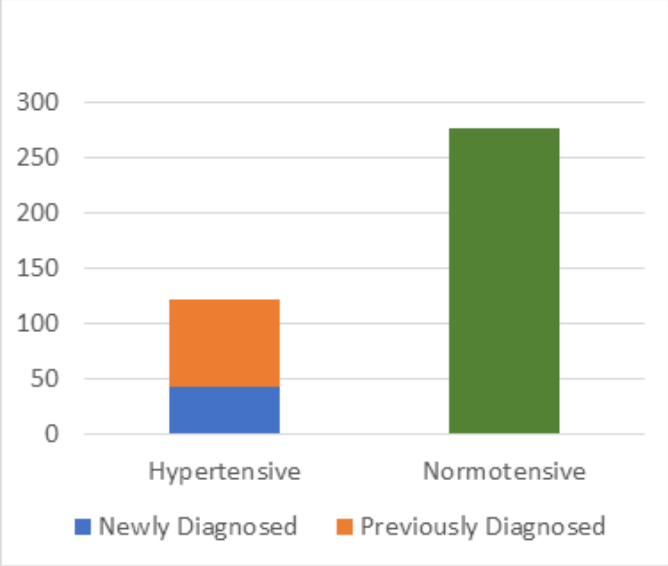
Among the 430 patients 123 were hypertensive (28.60%) whereas 277 (71.40%) were normotensive.

Amongst the 123 hypertensive patients 44 were newly diagnosed whereas 79 were previously diagnosed.

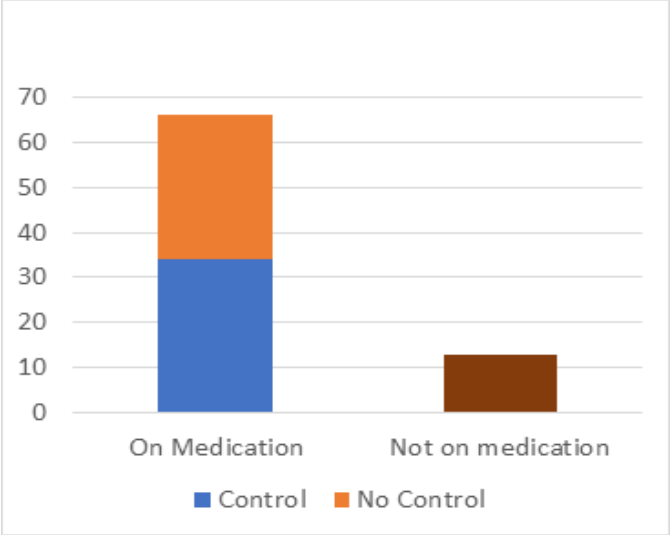
Amongst the 79 previously diagnosed 66 were taking medication and out of the 66, 34 had perfect control and 32 were not controlled.



Graph 1: Gender wise distribution of Hypertensive patients



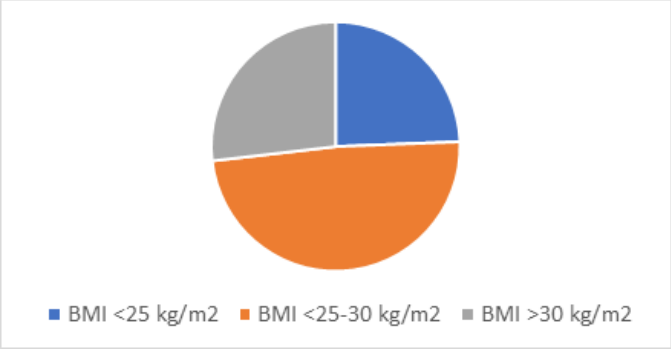
Graph 2: omparison of Newly diagnosed and previously diagnosed hypertensive patients with normotensive patients



Graph 3: Comparison of patients taking medication vs not on any medication for hypertension

Proportion of hypertensive patients according to BMI: (Amongst the 123 hypertensive patients n=123)

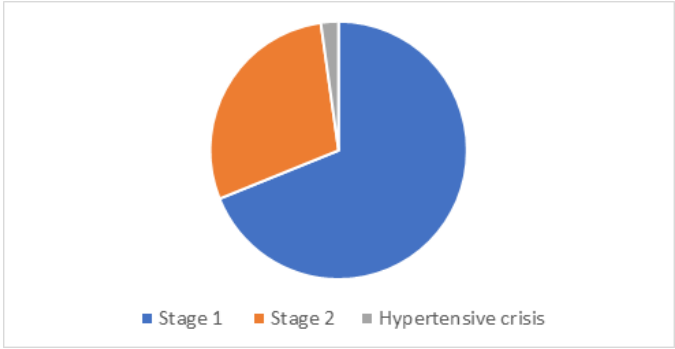
- BMI <25 kg/m^2 – 30 (24.39%)
- BMI -25-30 kg/m^2 – 60 (48.78%)
- BMI >30 kg/m^2 – 33 (26.82%)



Graph 4: BMI wise distribution of all hypertensive patients

Proportion of newly diagnosed hypertensive patients according to different grades of hypertension (n= 44)

- Stage I- 30 (68.18%)
- Stage II- 13 (29.54%)
- Hypertensive crisis- 1 (2.27%)



Graph 5: Distribution of patients according to various grades of hypertension

Mean Blood Pressure value among different stage of hypertension

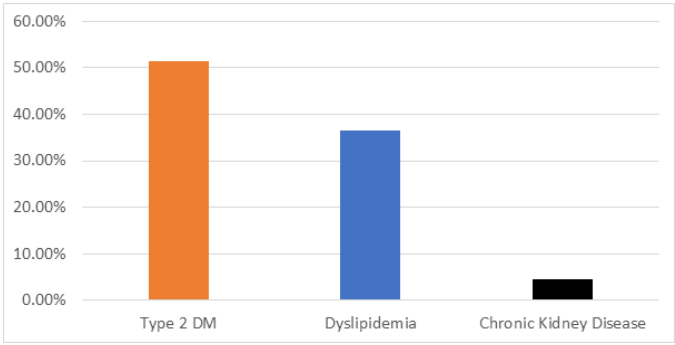
- Stage I- 136 ± 1.33/86 ± 0.33
- Stage II- 154.69 ± 2.35/98 ± 0.65

Various biochemical parameters when compared with Stage-2 hypertension were

- Mean low density lipoprotein (113.26 mg/dL)
- Mean serum creatinine (2.42 mg/dL),
- Mean HbA1c (7.7%)

Prevalence of commonly observed comorbidities amongst the hypertensive patients were:

- Type 2 diabetes mellitus (T2DM: 51.5%),
- Dyslipidemia (36.4%), and
- Chronic kidney disease (CKD: 4.4%).
- Others- 7.7%

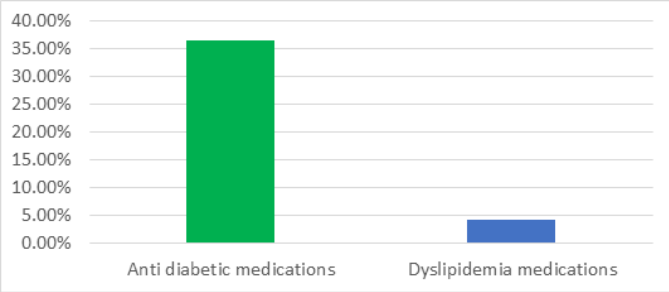


Graph 6: Prevalence of various comorbidities among hypertensive patients

Top Concomitant drugs include

- Anti diabetic medications- 36.4%

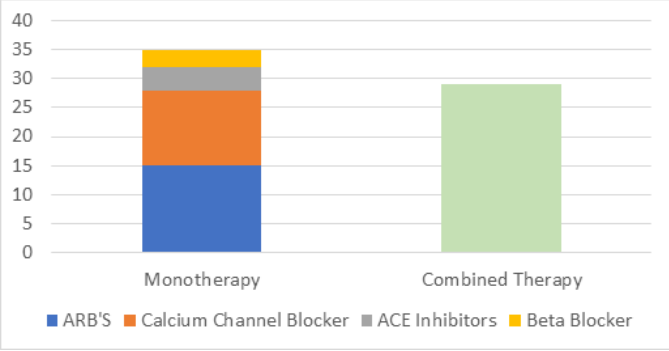
- Drugs for dyslipidemia- 25%



Graph 7: Depiction of different concomitant drugs used by hypertensive patients

Amongst the previously diagnosed hypertensive patients those who were already on treatment- ratio of monotherapy vs combination therapy (n=66)

- Monotherapy- 37
- Combined therapy- 29



Graph 8: Comparison of previously diagnosed hypertensive patients taking monotherapy vs combined therapy and further distribution of monotherapy into various categories of anti-hypertensive medications

Prevalence of anti-hypertensive category amongst those on monotherapy (n=37)

- ARB'S-15
- ACE Inhibitors- 4
- Calcium Channel Blocker- 13
- Beta Blocker- 5

Amongst those who were on combination therapy (n=29)

- 13 patients were on ARB's + Calcium Channel Blocker
- 10 were on ARB's + diuretics
- 6 were on ARB + Calcium channel blocker

For those patients with comorbidities

- T2DM- Telmisartan (11) alone or Amlodipine + Telmisartan (5) were most prescribed
- Coronary artery disease- Metoprolol was prescribed to 4 such patients

Discussion

Although the exact reason of high blood pressure in young people isn't always understood, taking efforts to reduce the weight, lead a sedentary lifestyle, and consume too much alcohol or salt might be the initial steps in the right direction. Some high blood pressure sufferers may not notice a change in their symptoms, but over time, the added strain on your arteries and heart muscle may reduce the flow of blood and oxygen to your heart and can cause chest discomfort, heart attacks, and finally heart failure. It is a fact that hypertension among youth is not uncommon.

In the study conducted by Geevar et al [4] on young adults aging between 20-39 years, they found that 11.2% of the population were hypertensive and 33.3% were prehypertensive. Whereas, in the present study it was found that 28.6% of the population were hypertensive which is significantly more when compared to aforementioned study.

Hypertension was more among males when compared to males (56% vs 44%) which is somewhat similar to study conducted by Kumar K et al [5] where they found prevalence among male between age group of 15-40 to be 58.7% when compared with females of same age group where prevalence was 41.3%.

Amongst the 123 detected hypertensive patients 44 (35.77%) were newly diagnosed whereas 79 (64.23%) were previously diagnosed. In a pooled analysis of 1201

population-representative studies with 104 million participants it was found that globally 51% of males and 41% of females were newly diagnosed. [6] The findings of the same study further reveal that females 47% were treated and amongst them 24% had poor control and23% had their Blood pressure controlled on medications. In the male group 38% were treated and 20% had poor control whereas 18% had a control on blood pressure. In the present study Amongst the 79 previously diagnosed 66 were taking medication and out of the 66, 34 had perfect control and 32 were not controlled.

In a study conducted by Gupta R et al [7] among the 2581 hypertensive patients 39.8% (1029) patients had BMI <25 kg/m^2, 41.2% (1063) patients had BMI between 25-30 kg/m^2 and 18.9% (489) patients had BMI >30 kg/m^2. In the present study amongst the 123 hypertensive patients 30(24.39%) patients had BMI <25 kg/$m^{2,}$ 60 (48.78%) patients had BMI -25-30 kg/m^2, 33 (26.82%) patients had BMI >30 kg/m^2.

According to new hypertension grading by American Heart Association, in this present study among newly diagnosed hypertensive patients (44), 30 (68.18%) belonged to stage I, while 13 (29.54%) belonged to stage II and 1 patient had Hypertensive crisis (2.27%).

In the study conducted by Desai N et al [8], they found out that amongst the overall, 29.1% of patients had hypertension only, while remaining had coexistence of one or multiple comorbidities—hypertension with diabetes mellitus (42.4%), hypertension with diabetes mellitus and dyslipidemia (20.7%), and hypertension with dyslipidemia (7.8%). In the current study 51.5% of hypertensive had type 2 diabetes mellitus 36.4% had dyslipidemia and 4.4% had chronic kidney disease. 36.4% of the hypertensive patients were taking medications for diabetes mellitus and 25% were taking medication for dyslipidemia.

In the present study 37 among the 66 previously diagnosed hypertensive patients were taking monotherapy whereas 29 were taking polytherapy. Most common monotherapy drug class prescribed was ARB's (40.5%) followed by Calcium Channel Blockers (35%). In the study by Marinier K et al [9], they found that ACE inhibitor (37.9%) was the most prescribed monotherapy drug class followed by Calcium Channel blocker (31.7%). While assessing combination therapy the present study found out that ARB with Calcium channel blocker was the most preferred choice while prescribing polytherapy treatment for controlling hypertension.

Conclusion

The present study points out that 28.60% of the young adult patients were hypertensive. Which is quiet a big proportion. In this study approx. one third of the patients were newly diagnosed and rest of the two third were previously diagnosed with hypertension.

Most of the previously diagnosed patients were on medications but still half of them did not have perfect control. These young hypertensive patients had co-morbidities like Diabetes mellitus, chronic kidney disease and dyslipidemia which makes the situation more worse.

For the treatment point of view angiotensin receptor II blockers (ARBs) and calcium channel blockers (CCBs) were the most prescribed monotherapy antihypertensive drugs and proves to be the best option. ARBs + diuretics and ARBs + CCBs as a combination therapy were most preferred outcome to which still remains controversial. Telmisartan and/or Amlodipine + Telmisartan proves to be the preferred option for patients with T2DM mostly because of their synergistic actions Just like what old

literature supports our study also shows that metoprolol was the most commonly prescribed AHD for coronary artery disease patient. Such may be due to cardioprotective effects of metoprolol.

As this study points and with the increasing trend of hypertension in young adults, all such young adults attending the opd should be screened for hypertension, and if previously diagnosed should be thoroughly searched for any co morbidities. A planned-out treatment protocol should be initiated in all such hypertensive young patients. The overall aim should be to achieve a perfect control either by Monotherapy or by using combined therapy whatever the physician prefers.

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