

**Research Article****Frequency of Hypertension in Patients Presenting in a Tertiary Care Hospital****<sup>1</sup>Muhammad Fawad Afzal, <sup>2</sup>Sammar Saeed****and <sup>3</sup>Muhammad Usman Youns**<sup>1</sup>DHQ Hospital, Faisalabad<sup>2</sup>Sharif Medical City Hospita,  
Lahore**ABSTRACT**

**Objectives:** determine the frequency of hypertension in patients presenting in a tertiary care hospital and to compare the mean hs-C-reactive protein in hypertensive and normotensive cases.

**Methodology:** 204 patients presenting who fulfilled the inclusion and exclusion criteria were admitted from OPD, DHQ Hospital, Faisalabad. Informed consent was obtained and patient demographic information (name, age, contact) was recorded. Blood pressure of patients was checked by researcher himself. Cases were labeled as Hypertensive, if BP>140/90mmHg on two consecutive occasions and cases were labeled as Normotensive, if BP<140/90mmHg on two consecutive occasions. Two groups were made. Blood serum of both groups was drawn and sent to hospital laboratory. Report was assessed by a single pathologist. Level of hs-CRP was noted.

**Results:** In our study, out of 204 cases, 42.65%(n=87) were between 40-50 years of age and 57.35%(n=117) were between 51-60 years of age, mean+sd was calculated as 51.02+5.88 years, 51.47%(n=105) were male and 48.53%(n=99) were females, frequency of hypertension in patients presenting in a tertiary care hospital was recorded as 25.49%(n=52) had hypertension while 74.51%(n=152) were normotensive, comparison of mean hs-C-reactive protein in hypertensive and normotensive cases was recorded which shows 3.23+0.83mg/L in hs-C reactive protein level in hypertensive cases while 1.58+0.70 mg/L was recorded in normotensive cases, p value was calculated as 0.000.

**Conclusion:** We concluded that the mean hs-CRP is significantly higher in hypertensive cases as compared to normotensive controls. However, in future early screening of CRP should be done to avoid delayed diagnosis and management of hypertension.

**Keywords:** Hypertension, normotensive, hs-C-reactive protein

**INTRODUCTION**

Hypertension (HTN) or high blood pressure, defined as BP in excess of 140/90 mmHg, sometimes called arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is elevated. This requires the heart to work harder than normal to circulate blood through the blood vessels.<sup>1</sup> Hypertension is classified as either primary (essential) hypertension or secondary hypertension; about 90–95% of cases are categorized as "primary hypertension" which means high blood pressure with no obvious underlying medical cause. The remaining 5–10% of cases (secondary

hypertension) are caused by other conditions that affect the kidneys, arteries, heart or endocrine system.<sup>2</sup> Hypertension is a worldwide epidemic; accordingly, its epidemiology has been well studied. In many countries, 50% of the population older than 60 years has hypertension. Overall, approximately 20% of the world's adults are estimated to have hypertension. The 20% prevalence is for hypertension as BP in excess of 140/90 mmHg. The prevalence dramatically increases in patients older than 60 years.<sup>3</sup> Substantial improvements have been made with regard to improving awareness and treatment of

hypertension. However, approximately 30% of adults are still unaware of their hypertension; up to 40% of people with hypertension are not receiving treatment; and, of those treated, up to 67% do not have their blood pressure (BP) controlled to less than 140/90 mm Hg.<sup>4</sup>

Increased concentration of high sensitivity C-reactive protein (hs-CRP), which is an important inflammatory marker, would increase risk of cardiovascular disease. Therefore, increased CRP concentration in blood might be an important prediction for occurrence, development and progress of hypertension and other cardiovascular disease, the interactions between CRP and other risk factors would play an important role in the development of hypertension.<sup>5</sup> One study found raised mean level of hs-CRP in hypertensive patients (3.26±1.37mg/L) as compared to normotensive population (1.36±0.26mg/L).<sup>6</sup> The mean levels of hs-CRP in the hypertensive and normotensive groups were 4.29 and 2.43 respectively. Although these levels were within the normal range (0.068- 8.2), there was a significant analytical difference between the two groups.<sup>7</sup> However, this study is to compare the mean hs-CRP level in hypertensive and normotensive cases presenting in a tertiary care hospital. CRP predicts CHD incidence in healthy subjects and has been associated with decreased endothelium-dependant relaxation, a potential risk factor for hypertension. Through this study we wanted to prove that raised CRP is an independent marker for prediction of hypertension-related disorder such as IHD, VHD and cardiac attacks and to aware the people for pre-screening of CRP to get alert for upcoming problem. If we will achieve the desired results, then in future we will recommend early screening of CRP to avoid delayed diagnosis and management of hypertension.

**METHODOLOGY**

A total of 204 patients presenting who fulfilled the inclusion and exclusion criteria were admitted from OPD, DHQ Hospital, Faisalabad. Informed consent was obtained and patient demographic

information (name, age, contact) was recorded. Blood pressure of patients was checked by researcher himself. Cases were labeled as Hypertensive, if BP>140/90mmHg on two consecutive occasions and cases were labeled as Normotensive, if BP<140/90mmHg on two consecutive occasions. Two groups were made. Blood serum of both groups was drawn and sent to hospital laboratory. Report was assessed by a single pathologist. Level of hs-CRP was noted. All this information was recorded on proforma (attached).

**RESULTS**

Age distribution of the patients was done which shows that 42.65%(n=87) were between 40-50 years of age and 57.35%(n=117) were between 51-60 years of age, mean±sd was calculated as 51.02±5.88 years. Gender distribution of the patients was done which shows that 51.47%(n=105) were male and 48.53%(n=99) were females. Frequency of hypertension in patients presenting in a tertiary care hospital was recorded as 25.49%(n=52) had hypertension while 74.51%(n=152) were normotensive.

Comparison of mean hs-C-reactive protein in hypertensive and normotensive cases was recorded which shows 3.23±0.83mg/L in hs-C reactive protein level in hypertensive cases while 1.58±0.70 mg/L was recorded in normotensive cases, p value was calculated as 0.000.

**Table No. 1** Age Distribution (N=204)

Age(in years)	No. of patients	%
40-50	87	42.65
51-60	117	57.35
Total	204	100

Mean±SD: 51.02±5.88

**Table No. 2** Gender Distribution (N=204)

Gender	No. of patients	%
Male	105	51.47
Female	99	48.53
Total	204	100

**Table No. 3** Frequency Of Hypertension In Patients Presenting In A Tertiary Care Hospital (N=204)

Hypertension	No. of patients	%
Yes	52	25.49
No	152	74.51
Total	204	100

**Table No. 4** Compare The Mean Hs-C-Reactive Protein In Hypertensive And Normotensive Cases (n=204)

Mean hs-C-reactive protein	Hypertensive	Normotensive
	3.23±0.83	1.58±0.70

P value=0.000

**DISCUSSION**

This study was planned this study to compare the mean hs-CRP level in hypertensive and normotensive cases presenting in a tertiary care hospital to measure that whether there is any relationship exist between CRP and hypertension or not.

In our study, out of 204 cases, 42.65%(n=87) were between 40-50 years of age and 57.35%(n=117) were between 51-60 years of age, mean±sd was calculated as 51.02±5.88 years, 51.47%(n=105) were male and 48.53%(n=99) were females, frequency of hypertension in patients presenting in a tertiary care hospital was recorded as 25.49%(n=52) had hypertension while 74.51%(n=152) were normotensive, comparison of mean hs-C-reactive protein in hypertensive and normotensive cases was recorded which shows 3.23±0.83mg/L in hs-C reactive protein level in hypertensive cases while 1.58±0.70 mg/L was recorded in normotensive cases, p value was calculated as 0.000.

The findings of our study are in agreement with a study found raised mean level of hs-CRP in hypertensive patients (3.26±1.37mg/L) as compared to normotensive population (1.36±0.26mg/L).<sup>6</sup>

Another study recorded mean levels of hs-CRP in the hypertensive and normotensive groups were 4.29 and 2.43 respectively. Although these levels were within the normal range (0.068-8.2), there was a significant analytical difference between the two groups,<sup>7</sup> which is in agreement with our study.

Another study<sup>8</sup> reported that serum hs-CRP was a strong predictor of HTN occurrence in normal or prehypertensive people in comparison to other inflammatory markers such as interleukin 6, TNF- $\alpha$ , and angiotensin II.

Given the role of serum hs-CRP in HTN, researchers have studied the effect of hypertensive

medications on the serum hs-CRP level, prevention of HTN, and its complications. Valsartan is known to decrease blood pressure and hs-CRP levels.<sup>9</sup> Aspirin and statins have same effects on the serum hs-CRP level and could prevent HTN, but this claim requires further research.

Although the existing literature contains only a small number of studies that have demonstrated the direct effect of serum hs-CRP lowering on the improvement of cardiovascular diseases, other interventions such as body weight reduction, cigarette smoking cessation, and Aspirin (and statins) consumption are believed to be associated with reduced cardiovascular events and serum hs-CRP level, indicating an indirect role of hs-CRP lowering.

The findings of our study in agreement with the above studies justify our hypothesis that “The mean hs-CRP in higher in hypertensive cases as compared to normotensive controls” is justified.

However, it is proven that raised CRP is an independent marker for prediction of hypertension-related disorder such as IHD, VHD and cardiac attacks and beneficial to aware the people for pre-screening of CRP to get alert for upcoming problem. It is recommended that in future early screening of CRP should be done to avoid delayed diagnosis and management of hypertension.

**CONCLUSION**

We concluded that the mean hs-CRP is significantly higher in hypertensive cases as compared to normotensive controls. However, in future early screening of CRP should be done to avoid delayed diagnosis and management of hypertension.

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