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Original Research Article

Prevalence of Heparin induced thrombocytopenia among Indian patients who underwent Heparin therapy in five cities of India: A cross sectional descriptive study

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ABSTRACT

Background: Thrombocytopenia is the platelet disorder in which the thrombocytes count reduces less than 1.5 lakhs. Medication is the prime management of any treatment, the medicines advised to patients help in curing the disease, however these medications have adverse effects too, these adverse reactions are local and systemic, one such drug used in clotting disorder develops thrombocytopenia and the condition is called Heparin induced thrombocytopenia. The present study aims to study the prevalence of heparin induced thrombocytopenia in multiple cities in India.

Materials and Methods: A cross sectional study designed to assess the prevalence of heparin induced thrombocytopenia in India for a period of 11 months from January 2022 to November 2022. A total of 2860 samples were selected from different diagnostic centers at Lakhimpur, Panipat, Sonipat, Gohana, Delhi all heparin administrated patients samples were collected in the clinical area and who were at risk of developing decreased platelets counts or any skin related symptoms like rashes, petechiae ,redness, red spots were identified.

Result: The study was conducted for 2860 samples of which 109 found have heparin induced thrombocytopenia, the prevalence of heparin-induced thrombocytopenia was 3.8.

Conclusion: Heparin is used in clotting disorder; the adverse effect of heparin usage can lead to heparin-induced thrombocytopenia. The present study identified the prevalence rate of heparin-induced thrombocytopenia, which help in identifying the complication associated with the heparin therapy and its induced thrombocytopenia.

1. Introduction

One of the most popular anticoagulants used on patients is heparin, which is given during cardiac catheterization, angioplasty, cardiac bypass, and the treatment of unstable angina and myocardial infarction.[1–4] Heparin has a number of clinical benefits, such as its quick reversibility with protamine and instantaneous onset following intravenous injection. In some circumstances, such as cardiopulmonary bypass, there isn't a general-use heparin alternative.[5–7] Heparin-induced thrombocytopenia, however, is one of the most typical side effects (HIT).[8] HIT can develop in 5% to 10% of patients using unfractionated (UF) heparin, usually 4 to 15 days after starting treatment, but it can happen as

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soon as the first day in individuals who have previously used heparin.[9–12] Heparin-induced thrombocytopenia-thrombosis (HITT), repeated and recurrent arterial and venous thromboembolic episodes, and a death rate of up to 30% are all symptoms of the illness. Many of the patients receiving heparin have co-morbid conditions that put them at risk for developing thrombocytopenia from other reasons, such as sepsis, DIC, medications, or the impact of extracorporeal circulation during open heart surgery, therefore it may be challenging to make the diagnosis of HIT.[13] If HIT is present in these conditions, it is imperative to halt heparin medication as soon as feasible; as a result, laboratory detection of the illness becomes crucial.[11]

Heparin is the drug used for thromboprophylaxis in cardiovascular diseases, neuro disorders, dialysis, extracorporeal circulation, but the drug has adverse effect and patients are at risk of developing, heparin induced thrombocytopenia.[14] Heparin induced thrombocytopenia is clinical disorder, caused due to immune mediated adverse reaction resulted from emergence of antibodies which activated micro particles of platelets in presence of heparin. Hence, the present study designed to study the prevalence of heparin induced thrombocytopenia at India.

2. Objectives

The present study aimed to assess the prevalence of heparin-induced thrombocytopenia in multiple cities in India.

3. Materials and Methods

A cross sectional study designed to assess the prevalence of heparin induced thrombocytopenia in India for a period of 11 months from January 2022 to November 2022. A total of 2860 samples were selected from different diagnostic centers at Lakhimpur, Panipat, Sonipat

Gohana, Delhi, all heparin administrated patients samples were collected in the clinical area and who were at risk of developing decreased platelets counts or any skin related symptoms like rashes, petechiae, redness, red spots were identified.

4. Results

The present study is designed to assess the prevalence of heparin induced thrombocytopenia. The following are the findings of the study.

Table 1, describes the distribution of heparin induced thrombocytopenia cases at various selected cities of North India, in Lakhimpur total 547 samples were collected of them 16 samples, in Panipat total 755 samples were collected 27 samples, in Sonipat total 654 samples were collected of them 29 samples, in Gohana total 259 samples were collected of them 12 samples and in Delhi total 645 samples were collected of them 25 samples were heparin induced thrombocytopenia respectively.

The study also found that prevalence of heparin induced thrombocytopenia in total samples of 2860, at Lakhimpur is 2.9%, Panipat is 3.5%, Sonipat is 4.4%, Gohana is 4.6%, Delhi is 3.8% respectively and total prevalence of heparin induced thrombocytopenia is represented in pie diagram.

The study also found that prevalence of heparin-induced thrombocytopenia is 3.8%.[1]

From Table 2, the study found that out of 109 total heparin induced thrombocytopenia cases 71 (65.13%) were males and 38 (34.86%) were females, signifies that the prevalence of heparin-induced thrombocytopenia male are prevalence is greater than females.

Table 3, describes the distribution of the samples as per their age in years, in Lakhimpur out of 16 heparin induced thrombocytopenia samples 20 to 40 years aged samples were four (25.00%), 41 to 60 years aged were 10 (62.50%) and more than 61 years were two (12.50%), in Panipat out of 27 heparin induced thrombocytopenia samples 20 to 40 years aged samples were six (22.23%), 41 to 60 years aged were 19 (70.37%) and more than 61 years were two (7.40%), in Sonipat out of 29 heparin induced thrombocytopenia samples 20 to 40 years aged samples were five (17.24%), 41 to 60 years aged were 21 (72.41%) and more than 61 years were three (10.34%), in Gohana out of 12 heparin induced thrombocytopenia samples 20 to 40 years aged samples were three (25.00%), 41 to 60 years aged were six (50.00%) and more than 61 years were three (25.00%), in Delhi out of 25 heparin induced thrombocytopenia samples 20 to 40 years aged samples were five (20.00%), 41 to 60 years aged were 15 (60.00%) and more than 61 years were five (20.00%) signifies that the heparin induced thrombocytopenia can cause to any age group.

5. Discussion

The present study aimed to study the prevalence of the heparin induced thrombocytopenia cases in India. The study conducted for a period of 11 months from January 2022 to November 2022 collected 2860 samples of which 109 samples were showed heparin induced thrombocytopenia.

The present study designed to distribution of the prevalence of the heparin induced thrombocytopenia found that the prevalence is 3.8% in India these findings were similar to the study.[15–17]

the study witnessed that out of 109 samples 71 (65.13%) were males and 38 (34.86%) were females these finding were similar to study[3,5,6] and the study also found that the age of heparin induced thrombocytopenia is similar in all age groups these findings were similar to the study.[18,19]

6. Conclusion

Heparin is a coagulant drug used in bleeding disorder, Heparin induced thrombocytopenia is the formation of

Table 1: Describes the distribution of the heparin-induced thrombocytopenia cases at various cities under study.

S.No.	City	Number of samples	Number of drug induced thrombocytopenia	Percentage
1	Lakhimpur	547	16	2.9
2	Panipat	755	27	3.5
3	Sonipat	654	29	4.4
4	Gohana	259	12	4.6
5	Delhi	645	25	3.8
Total		2860	109	3.8

Table 2: Describes the distribution of based on gender of the samples having heparin-induced thrombocytopenia.

S.No.	City	Number of drug induced thrombocytopenia	Male	Percentage	Female	Percentage
1	Lakhimpur	16	6	8.45	10	26.31
2	Panipat	27	20	28.16	7	18.42
3	Sonipat	29	18	25.35	11	28.94
4	Gohana	12	8	11.26	4	10.52
5	Delhi	25	19	26.76	6	15.78
Total		109	71	65.13	38	34.86

Table 3: Describes the distribution of the samples according to their age in years.

S.No.	City	Number of heparin induced thrombocytopenia	Age in years	Number of samples	Percentage
			20 to 40	04	25.00
1	Lakhimpur	16	41 to 60	10	62.50
			More than 61	02	12.50
			20 to 40	06	22.23
2	Panipat	27	41 to 60	19	70.37
			More than 61	02	7.40
			20 to 40	05	17.24
3	Sonipat	29	41 to 60	21	72.41
			More than 61	03	10.34
			20 to 40	03	25.00
4	Gohana	12	41 to 60	06	50.00
			More than 61	03	25.00
			20 to 40	05	20.00
5	Delhi	25	41 to 60	15	60.00
			More than 61	05	20.00
Total		109		109	

thrombocytopenia due to administration of heparin. Heparin induced thrombocytopenia caused due to micro particles release that activated the thrombin. Also, can be caused by formation of abnormal antibodies. The stopping of the treatment with heparin will further complication, the knowledge of prevalence of adverse effects of heparin prevents the incidence of the complications and better manage patients with bleeding and clotting disorders, the present study found that prevalence of heparin induced thrombocytopenia as 3.8% which is evident by other studies. This prevalence of heparin induced thrombocytopenia in various cities of India gives relevant information to control and prevent the heparin complications and manage patients as necessary.

7. Conflict of Interest

None to declare.

8. Source of Funding

None.

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