Original Research Article

A study on clinical profile and etiological spectrum of polycythaemia in patients presenting to a tertiary care centre in Mallareddy Institute of Medical Sciences, Suraram

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Abstract

Background: Polycythaemia is defined as an increase in the hemoglobin above normal. This increase may be real or only apparent because of a decrease in plasma volume (spurious or relative polycythaemia) and the real polycythaemia can be because of primary due to genetic mutations or secondary due to increased erythropoietin production. The dominant symptoms from an increased red cell mass are related to hyper viscosity and thrombosis (both venous and arterial), because the blood viscosity increases logarithmically at hematocrits >55%. The present study aimed to characterize the different clinical presentations and to find out the complications associated with polycythaemia.

Aim and objectives: To identify different clinical presentations of polycythaemia and to evaluate various etiologies of polycythaemia.

Materials and methods: Patients with polycythaemia presented to OPD or in patient in the Department of General Medicine in Malllareddy Institute of Medical Sciences, Suraram from June 2020 to January 2022 were included. This was a descriptive observational study in which total of 24 patients were analyzed. Patients with polycythaemia (male Hb >16.5g/dl and females Hb>16.0g/dl) were included. Patients admitted with acute dehydration, sepsis and shock and other conditions leading to spurious polycythaemia and patient on diuretics were excluded. All the patients included

who were found to have increased RBC mass not including patients from exclusion criteria. A detailed clinical history and physical examination was performed to identify clinical patterns of presentation and look for any complications, and necessary lab investigations were sent accordingly, to evaluate for the cause of polycythaemia.

Results: A total of 24 patients were included in the study out of which 16 were males .and 8 were females. Polycythaemia Vera was found in 33% while secondary causes were seen in 67%, patients with polycythaemia vera were found to have more thrombotic complications and the mean age of presentation was in between 30- 40 years. Amongst the secondary causes COPD was the most common cause and smoking was the most common risk factor.

Conclusion: Polycythaemia presents wide and varied clinical manifestations. polycythaemia rubra vera is a not an uncommon finding in patients presenting with symptoms of arterial or venous thrombosis, polycythaemia rubra vera is more commonly associated with thrombotic tendencies when compared to secondary causes of polycythaemia, when evaluating a case of polycythaemia it is necessary to look for signs and symptoms of secondary causes, to especially look for erythropoietin secreting tumors an high index clinical suspicion is required in such cases.

Key words

Clinical profile, Etiology, Polycythaemia.

Introduction

Polycythaemia is defined as an increase in the hemoglobin above normal. This increase may be real or only apparent because of a decrease in plasma volume (spurious or relative polycythaemia) [1] and the real polycythaemia can be because of primary due to genetic mutations or secondary due to increased erythropoietin production. Clinical signs and symptoms are wide and varied. The dominant symptoms from an increased red cell mass are related to hyper viscosity and thrombosis (both venous and arterial), because the blood viscosity increases logarithmically at hematocrits >55%.

The standard RBC mass does not usually exceed 36 ml/kg in males and 32 ml/kg in females. The reference ranges for normal hemoglobin levels and hematocrits vary depending on altitude, from ethnicity to ethnicity and country to country [2].

Polycythaemia vera (PV) is a stem cell disorder characterized as a panhyperplastic, malignant, and neoplastic marrow disorder. Its most prominent feature is an elevated absolute red blood cell mass because of uncontrolled red blood cell production. This is accompanied by increased white blood cell (myeloid) and platelet (megakaryocytic) production, which is due to an abnormal clone of the hematopoietic stem cells with increased sensitivity to the different growth factors for maturation [3, 4, 5, 6].

The examples of secondary absolute polycythaemia arehypoxia produced by chronic lung diseases, carboxyhemoglobinemia associated with smoking and renal cellcarcinoma uterine leiomyoma [7, 8]. Here is an attempt made in this study to find out the various clinical presentations of polycythaemia and associated complications.

Aim and objectives

- To identify different clinical presentations of polycythaemia
- To evaluate various aetiologies of polycythaemia

Materials and methods

Source of the data: Patients with polycythaemia presented to OPD or in patient in the Department of General Medicine in Malllareddy Institute of Medical Sciences, Suraram.

Study period: June 2020 - January 2022

This was a descriptive observational study a total of 24 patients were analyzed.

Inclusion criteria

Patients with polycythaemia (male Hb>16.5g/dl and females Hb>16.0g/dl)

Exclusion criteria

- Patients admitted with acute dehydration, sepsis and shock and other conditions leading to spurious polycythaemia.
- Patient on diuretics

All the patients included who were found to have increased RBC mass not including patients from exclusion criteria a detailed clinical history and physical examination was performed to identify clinical patterns of presentation and look for any complications, and necessary lab investigations were sent accordingly, to evaluate for the cause of polycythaemia.

Results

A total number of 24 cases were studied .the majority of patients were belonging to age group of 30-40 years (45.83%) followed by 40-50 years (25%) as per **Graph – 1**.

Among 24 patients, polycythemia was more commonly seen in males (66%) ratio of (3:2) predilection was seen (**Graph – 2**).

The mean haemoglobin level was 18.4 g% in males and 17.1 g% in females and other hematological parameters MCV (78.8 fl, 72.8 fl) and ESR (16.4 mm/hr - 18.4 mm/hr) were found respectively in males and females (**Table – 1**).

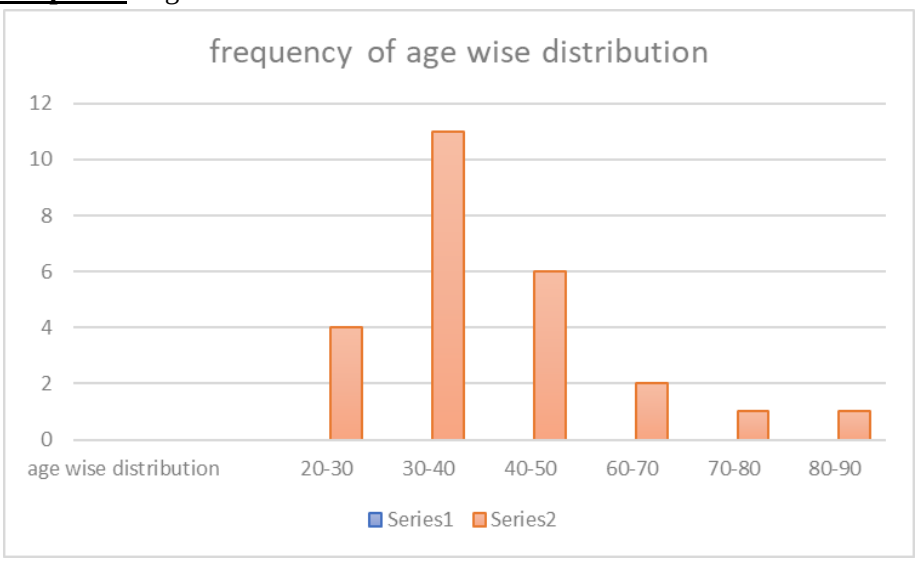
In this study, secondary causes of polycythaemia (70.83%) were common than primary polycythaemia (29.16%) among the secondary COPD constituted about (57.14%) was the most common cause of secondary polycythaemia which was followed by obstructive sleep apnoea(23.52%) as per **Graph – 3**.

Among 24 patients, plethora (33.3%) and aquagenic pruritis (20.8%) were the more common clinical symptoms found (**Graph – 4**).

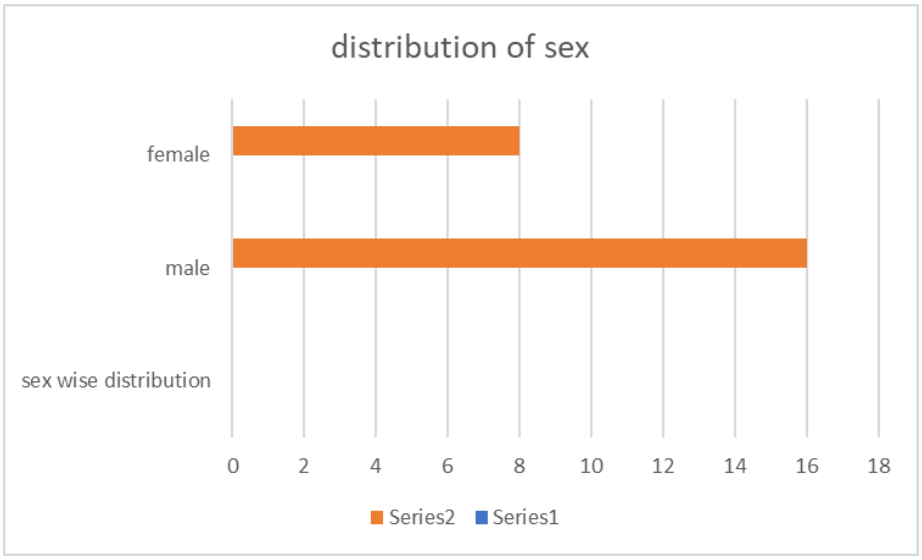
Among 24 patients, splenomegaly was found among (45.83%) and hypertension in (25%), splenomegaly was the most common initial clinical sign at presentation. Hypertension was not an uncommon finding (**Graph – 5**).

Among 24 patients, thrombotic events were found in 20.83% of which venous thrombosis was among 80% and arterial thrombosis 20%. In this study, thrombotic events were associated with patients in whom etiology was polycythaemia vera (**Graph – 6**).

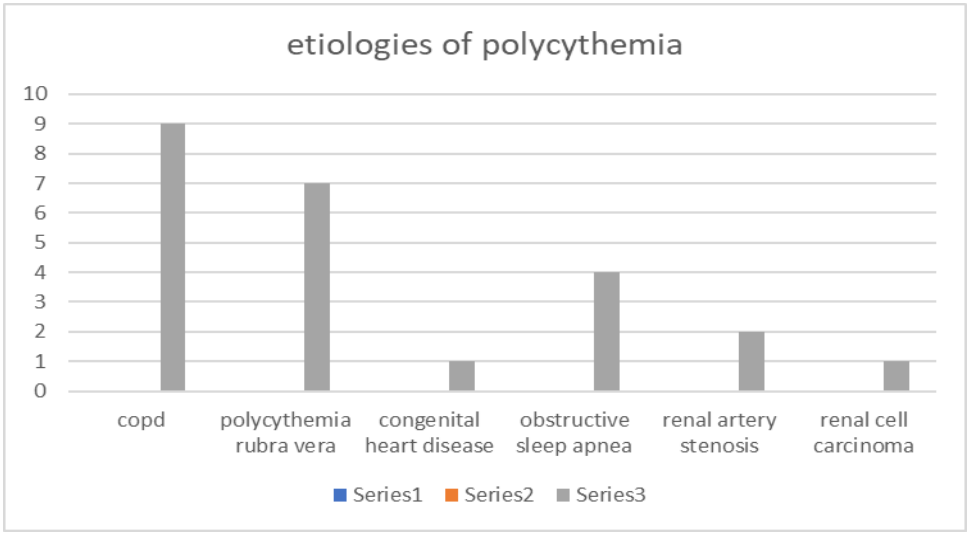
Graph – 1: Age distribution.



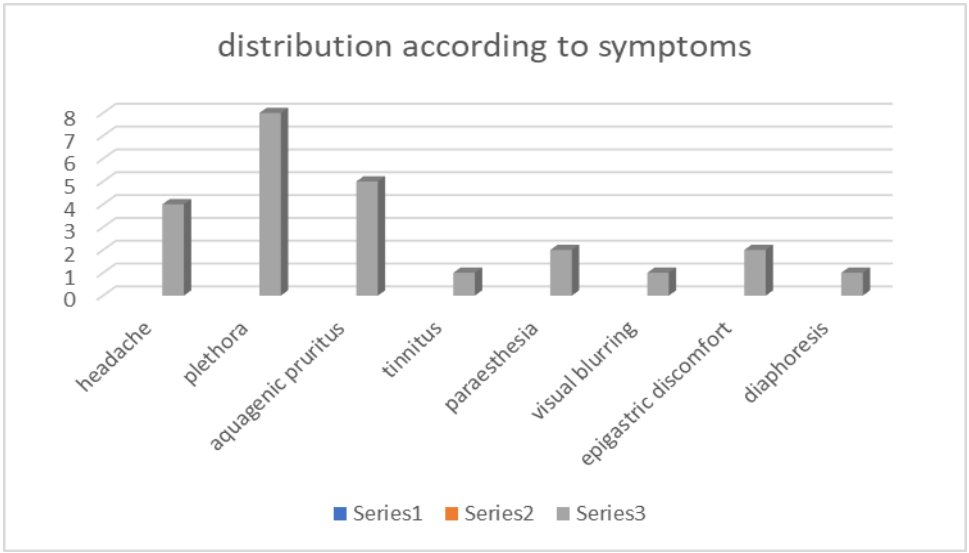
Graph – 2: Sex distribution.



Graph – 3: Etiologies of polycythemia.



Graph – 4: Distribution according to symptoms.



Graph – 5: Clinical signs at presentation.

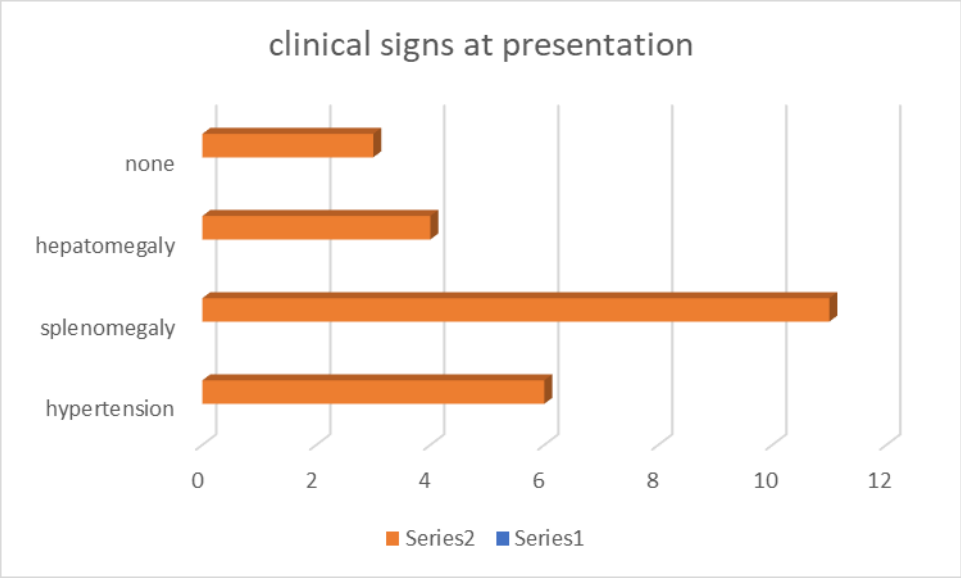
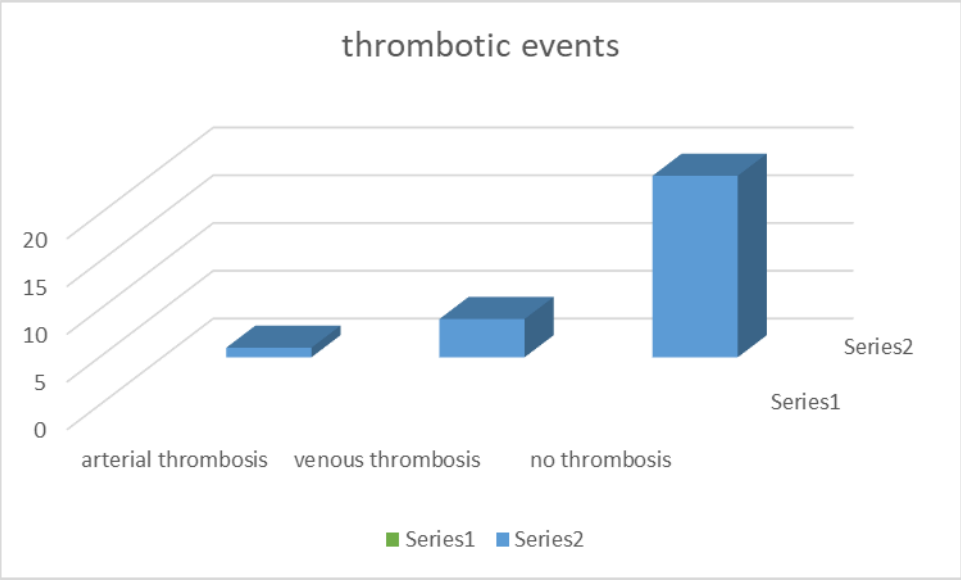


Table – 1: Hematological parameters.

	Means (male)	SD	Mean (female)	SD
HB (g/dl)	18.4	1.4	17.1	1.6
HCT (%)	56.7	2.1	51.5	0.5
MCV	78.8	0.8	72.8	6.1
PLT (lakhs/mm^3)	4.7	1.9	5.8	0.6
WBC (thousand/mm^3)	13,600	3.1	12,600	2.1
ESR (mm/hr)	16.4	5.8	18.4	6.1

Graph – 6: Thrombotic events.



Discussion

A total number of 24 cases were studied .the majority of patients are belonging to age group of 30-40 years (45.83%) with male sex predilection (66%). The mean age at presentation for the primary polycythemia group was 38.7 years, was lesser than two previous study by

Bhattacharya, et al. [11] (48 years) and (53.19) by Sazawal, et al. [7].

In this study, secondary causes of polycythaemia are more common found than primary polycythaemia and among them COPD was found to be the most common cause. Overall cases of polycythaemia are more frequent in males when compared to females. Similar findings were reports in pervious study by Ramnanthnevrekar, et al. [12].

And facial plethora and aquagenic pruritus are the most common clinical presenting features, aquagenic pruritis has been described in the literature as a common (nearly 50%) [9, 10] and characteristic is less commonly found in this study (20.8%).

Symptoms thrombotic complications associated with polycythemia are frequently seen in patients with polycythemia vera patients like cerebral venous sinus thrombosis and buddchiari syndrome and, in this study venous thrombosis (80%) is more than arterial thrombosis (20%).

Conclusion

Polycythaemia presents wide and varied clinical manifestations. polycythaemia rubra vera is a not an uncommon finding in patients presenting with symptoms of arterial or venous thrombosis, polycythaemia rubra vera is more commonly associated with thrombotic tendencies when compared to secondary causes of polycythaemia , when evaluating a case of polycythaemia it is necessary to look for signs and symptoms of secondary causes, to especially look for erythropoietin secreting tumours an high index clinical suspicion is required in such cases.

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