Acute portal vein thrombosis secondary to JAK2 V617F mutation: A case report  
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Abstract:
Myeloproliferative disorders (MPDs), whether overt or latent, represent a main intrinsic factor for the development of thrombosis in the portal, mesenteric, and hepatic veins. A 40 year old male farmer, presented with chief complaints of pain abdomen for the past 5 days. Based on clinical, laboratory and radiological findings, the patient was diagnosed to be suffering from acute portal vein thrombosis secondary to Janus Kinase Mutation.

Key words: Janus kinase; Hypertension; Myeloproliferative disorders; Portal vein Thrombosis

Introduction
Myeloproliferative disorders (MPDs), whether overt or latent, represent a main intrinsic factor for the development of thrombosis in the portal, mesenteric, and hepatic veins [1-4]. Venous thrombosis can involve all territories but MPDs, mainly polycythemia vera (PV) and essential thrombocythemia (ET), are the commonest underlying etiology for Budd–Chiari syndrome and Polymorphic Ventricular Tachycardia (PMVT); spontaneous endogenous erythroid colony formation being seen in up to 78% of patients thought to have Budd–Chiari Syndrome and in 48% of patients with splanchnic venous thrombosis [5]. On the other hand, venous thromboses significantly affect morbidity and mortality of patients with MPD and are associated with severe organ damage and high mortality [6].

Case report
A 40 year old male farmer, presented with chief complaints of pain abdomen for the past 5 days.

History of presenting illness: Patient was apparently alright 5 days ago and developed pain...
abdomen which was sudden in onset in epigastric & left upper part of abdomen. Pain was colicky in nature throughout and radiating to back on left side and progressive in severity. Pain aggravates on lying down & with intake of feeds - solids & liquids and associated with 2 episodes of vomiting. Relieved partially on bending forward. Pulse - 104 beats per minute, regular normal in rhythm, Volume, character, all peripheral pulses felt normally. Blood pressure - 124/80 mm of Hg right upper limb sitting position. Abdominal examination revealed dilated veins, pigmentation. On palpation mild tenderness is present in epigastrium, no rebound tenderness / guarding / Rigidity, Hepatomegaly / Splenomegaly. There is no evidence of free fluid. On percussion normal note is heard and liver span is normal. On Auscultation bowel sounds were sluggish and no venous hum/ bruit, hepatic or splenic rub. Cardio vascular system, respiratory system and nervous system are normal. The differential diagnosis was acute pancreatitis, acute mesenteric vascular ischemia and peptic ulcer. Upper GI endoscopy is normal.

**Investigations**

**Complete Blood Picture (a to g)**

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>a</td>
<td>Hb – 13 gm%</td>
</tr>
<tr>
<td>b</td>
<td>RBC count – 4.5 millions/cmm</td>
</tr>
<tr>
<td>c</td>
<td>Hematocrit – 38.4 %</td>
</tr>
<tr>
<td>d</td>
<td>WBC count – 7300 /cmm</td>
</tr>
<tr>
<td>e</td>
<td>P-62%, L-5%, M-2%, E-1%, B-0%</td>
</tr>
<tr>
<td>f</td>
<td>Platelet count–3.1 lakh/cmm</td>
</tr>
<tr>
<td>g</td>
<td>ESR - 38 mm by end of 1 hour</td>
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</tbody>
</table>

**Peripheral smear for cytology (1 to 5)**

1. RBC normocytic & normochromic
2. WBC Total & Differential count are normal
3. No immature forms seen
4. Platelets are adequate in number
5. No hemoparasites

Random blood sugar – 138 mg/dl, Blood urea – 29 mg/dl.

Seum creatinine-0.7 mg/dl, Liver function tests-Normal, Total bilirubin – 0.6 mg/dl (D- 0.1, ID- 0.5) SGOT – 14 U/L, SGPT – 16 U/L, ALP – 202 U/L, Serum amylase –65 U/L.

Serum lipase – 92 U/L, Prothrombin time: 19 secs (12-14 sec), (Lab control : 15 secs), INR : 1.39 ( 2.0 to 3.5), HIV - non reactive, HbsAg – negative, HCV – negative.

Written consent was taken from the patient for publishing this case.

**Figure 1: Ultrasound abdomen**

On ultrasound examination of abdomen, the following are the salient features:

- Decreased echogenicity of liver,
- portal vein thrombosis noted,
- no flow noted on cfm, hepatic artery shows increased flow,
- mild splenomegaly,
- minimal inter bowel fluid noted

Based on the above findings the **provisional diagnosis is portal vein thrombosis**.
Figure 2 & 3: CT Scan Abdomen

Salient features of CECT abdomen

1) non enhancing hypodensity

2) s/o thrombus is seen in portal vein extending to superior mesentric & splenic veins

3) mild splenomegaly

4) no focal lesion in liver or spleen
JANUS KINASE 2 (V617F) for MPDs POSITIVE (heterozygous). Method used: End point PCR.

Final diagnosis:
Acute portal vein thrombosis secondary to Janus Kinase Mutation

Discussion
Acute portal vein thrombosis is usually asymptomatic or pauci symptomatic & may be misdiagnosed until development of manifestations chronic portal hypertension. Prevalence & severity depends on velocity of development and extent of thrombosis. Patients usually complain of abdominal or lumbar pain, non spiking fever & systemic inflammatory response.

All idiopathic Intra abdominal venous thrombosis patients must be screened for JAK2 V617F mutation to detect latent myelo proliferative disorders (MPD). Detection of latent MPD may change treatment strategy & outcome. JAK2 V617F mutation was detected in 68 per cent (51 of 75) patients with chronic myelo proliferative disorders (MPD). The proportion of positive cases per disease subtype ranged from 28 per cent (28 of 34) for polycythemia vera (PV), 70 per cent (7 of 10) for essential thrombocythemia (ET) and 52 per cent (16 of 31) for idiopathic myelofibrosis (IMF) [7].

By JAK2 mutation screening more evidence can be obtained for the presence of a latent or overt MPD as underlying cause of extra hepatic portal vein thrombosis (EPVT). Hence JAK2 mutation is reported as surrogate marker for occult myelo proliferative disorders [8,9]. A negative JAK2 V617F study should not by itself preclude the diagnosis of an underlying myelo proliferative neoplasm (MPN). In such cases, further investigation, including a bone marrow biopsy, should be sought as part of a complete workup.

A very interesting finding in patients with thrombotic complications was the high prevalence of this mutation in female patients with Splanchnic vein thrombosis (SVT), indicating a gender-related susceptibility, while it was uncommon in patients with venous thrombosis at other locations or with arterial thrombosis [10,11].

Patients carrying JAK2 mutation had significantly (P<0.05) higher median WBC count and median platelet count as compared to JAK2 negative patients. There was no difference in age, haemoglobin and spleen size [12].

The frequent coexistence of MPD, SVT and JAK2V617F mutation has directed us towards genetic analysis in this patient.

Conclusion
It is advisable that peripheral blood mutation screening for JAK2 V617F be incorporated into the initial evaluation of patients with suspected chronic myeloproliferative disorders (CMPD). It is a sensitive and simple test, relatively cost-effective for screening.

References:
7. Sazawal, Sudha; Bajaj, Jyoti; Chikkara, Sunita; Jain, Sonal; Bhargava, Rahul; Mahapatra, Manoranjan.; 2010 Prevalence of JAK2 V617F mutation in Indian patients with chronic myeloproliferative disorders The Free Library, http://www.thefreelibrary.com/Prevalence of JAK2 V617F mutation in Indian patients with chronic...-a0242958367 (accessed March 01 2014).


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