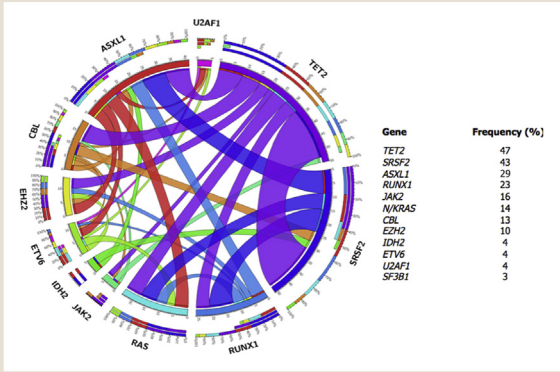
Figure 1 The co-occurrence and overall frequency of mutated genes in 70 advanced *KIT* D816V^{+} systemic mastocytosis (SM) patients represented by Circos diagram



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Genetic characterization of myeloproliferative neoplasms in Guatemala

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Context: Philadelphia chromosome positive patients are classified as Chronic Myeloid Leukemia, and the negative patients are included among the myeloproliferative neoplasms (MPNs). The myeloproliferative neoplasms are a heterogeneous group of diseases characterized by increased proliferation of the erythroid, megakaryocytic or myeloid lineages. Among MPNs, three diseases are included: polycythemia vera (PV), essential thrombocythemia (ET), and primary myelofibrosis (PMF). The JAK2 V617F mutation is a molecular marker common in MPNs, and is caused by a G>T mutation in exon 14 [The World Health Organization (WHO) has included the detection of JAK2 V617F as a criterion for the diagnosis of MPNs. The exon 12 JAK2 mutations have been found in JAK2 V617F PV negative patients. And exon 10 MPL gene mutations have been associated with ET and PMF, with the most common mutations being W515L and W515K. **Objective:** In our study, we determined the frequency of JAK2 V617F, JAK2 exon 12 and MPL exon 10 mutations in the Guatemalan population with myeloproliferative neoplasms. **Design and Patients:** We collected 154 peripheral blood samples from patients with a diagnosis of myeloproliferative neoplasms referred from different national hospitals. Every patient signed the informed consent form approved by the local ethics committee. We analyzed patients with a clinical diagnosis of MPNs. For the identification of the JAK2 and MPL mutations, we used two techniques: Sanger sequencing and allele specific PCR. **Results:** The JAK2 V617F mutation was evaluated by allele specific PCR, and we found 58 positive patients; 44 heterozygous and 14 homozygous. As the main result, we describe three new point mutations in exon 12 of the JAK2 gene (N515K, M535K and V536E). We also report that a low frequency of mutations of JAK2 V617F (40%) was found in PV. The MPL exon10 mutation was not found in any Guatemalan patient. **Conclusion:** In conclusion, we report three new point mutations (N515K, M535K and V536E) in JAK2 exon 12 in patients with polycythemia vera. And one patient had both JAK2 mutations (V617F and exon 12). The frequency of JAK2 V617F in PV is lower in the Guatemala population than reported in other countries. **Keywords:** JAK2, MPL, MYELOPROLIFERATIV NEOPLASM.

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JAK2V617F and Platelet Functions

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Introduction: This study investigated the relationship between the JAK2V617F mutation and platelet functions in 60 patients diagnosed with CMPN. **Material and Method:** Patients's platelet aggregation tests were made for ADP, ristocetin, epinephrine and collagen, using an aggregometer device. **Findings:** Among the 60 patients participating in the study, 30 had PV, 28 had ET and 2 had IMF. 28 of the patients were women (46.6%) and 32 were men (53.3%). The presence of JAK2 mutation was detected in 39 patients (65%). The frequency of the JAK2 mutation was detected to be (83.3%) for PV, (42.9%) for ET, and (100%) for IMF. Platelet function disorder was found in 80% of all patients. Platelet function disorder was detected in 76.9% of patients with positive JAK2 mutation, and 85.7% of patients with negative JAK2 mutation. Decreased response or responselessness was determined to ristocetin in 70% of the patients, to epinephrine in 45%, to ADP in 31.7%, and to collagen in 23.3%. Complete responselessness was determined to platelet aggregation tests in 8 patients. 7 among these 8 patients had positive JAK2V617F mutation. No statistically significant relationship was found in terms of epinephrine, ristocetin, collagen and ADP values between patients with positive JAK2V617F mutation and patients with negative JAK2V617F mutation. A value, which was near to be statistically significant, was found only in terms of the ADP values between patients with positive JAK2V617F mutation and patients with negative JAK2V617F mutation (p=0.051). **Results:** Contrary to literature, in our study, impaired aggregation response was observed to ristocetin most frequently, and secondly to epinephrine. In this respect, this is the first study that shows that platelet function disorder in CMPNs may be linked to ristocetin. An analysis of positive and negative JAK2V617F relationship of platelet function tests in our study produced no significant relationship. Only, a higher ratio of ADP was found in JAK2V617F negative CMPNs compared to