

Demographic Study of Gastrointestinal Stromal Tumors in Malaysia – A Comparison between East and West

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Abstract: Gastrointestinal stromal tumours (GISTs) are the commonest mesenchymal tumors of the gastrointestinal tract. We aim to compare the differences in epidemiology, presentation and tumor characteristics of GISTs in the geographically and culturally diverse East and West Malaysian population. A 7-year retrospective review of patients diagnosed with GISTs from Hospital Tuanku Ja'afar Seremban and Hospital Umum Sarawak, both being tertiary referral centres of the West and East Malaysia respectively was performed. 38 patients were diagnosed with GISTs within this period. There was a male preponderance in the West with 58.3% being Malays as compared to the East with a female predominance and a Chinese majority of 46.2%. However, in both regions, the mean age was similar (57years) and bleeding was the commonest presentation. GISTs were mostly gastric in origin but a quarter of it arose from the oesophagus, small bowel, mesentery and retroperitoneum. Tumors were greater than 5cm, 58.3% (West) and 69.2% (East) with mean size of 5.53cm and 7.21cm. 56% of GISTs had mitotic counts of more than 5 per 50 high power field (hpf) in East Malaysia as compared to 72% in West Malaysia. Almost half of the patients bi-regionally were stratified as high risk as per Fletcher's Criteria. In conclusion, GISTs have no variation in demographics between the East and West of Malaysia except gender and ethnicity predominance. However, extragastric GISTs were found more in the West.

Keywords: GIST, Gastrointestinal Stromal Tumor, Demographic, Characteristics, Malaysia, East, West.

INTRODUCTION

Gastrointestinal stromal tumors (GISTs) are a subset of mesenchymal tumors and represent the most common mesenchymal neoplasms of the gastrointestinal (GI) tract, accounting for less than 1% of all GI tumours [1]. GISTs are known to arise from interstitial cells of Cajal and are characterized by oncogenic mutations of the KIT receptor tyrosine kinase [2]. Although GISTs are researched extensively worldwide, Malaysia is yet to follow suit. We aim to compare the differences in epidemiology, presentation and tumor characteristics of GISTs in the geographically and culturally diverse East and West Malaysian population.

METHODOLOGY

A retrospective audit was performed on patients diagnosed with GISTs from 2 tertiary centres in Malaysia, namely, Hospital Tuanku Ja'afar, Seremban and Hospital Umum Sarawak, Kuching each representing West and East Malaysia respectively between years 2007 and 2013. All GISTs were included in this study. Records of each patient were studied for age, gender, ethnicity and the presentation. Histopathological reports were reviewed for tumour characteristics namely location, size, mitotic count and positivity for CD117. Patients were grouped according to risk of aggressive behaviour or malignant potential as proposed by Fletcher *et al.*, (Table-1) [3].

Table 1: Risk of aggressive behaviour or malignant potential in GISTs as proposed by Fletcher *et al.*, [3]

Tumour Size	<2cm	2 – 5cm	6 – 10cm	>10cm	Any Size
Mitotic Count	<5	<5	6 – 10	>5	Any rate
Risk	Very Low	Low	Intermediate	High Risk	

RESULTS

A total of 38 patients were diagnosed with GISTs in Hospital Tuanku Ja'afar, Seremban and

Hospital Umum Sarawak between 2007 and 2013. GISTs show a male predominance in West Malaysia (58.3%) and a female predominance in the East

(76.9%). Malays make the majority of patients (58.3%) in Peninsular whereas Chinese are the majority (46.2%) in Sarawak. Mean age at diagnosis in both regions were similar, 57.58 and 57.92 years respectively (Table-2). The commonest presentation was bleeding with other main chief complaints being dyspepsia, dysphagia, mass per abdomen and constitutional symptoms. Only 3 patients were diagnosed incidentally during endoscopy

or surgery for other indications. More than three quarters of the tumors were located in the stomach bi-regionally with fundus being the commonest site in the East (26.9%). On the contrary, GISTs of West Malaysia showed equal occurrences in the fundus, lesser curvature, greater curvature and body of stomach (16.7%).

Table-2: Demographic Characteristics of Patients

		West Malaysia	East Malaysia
Gender	Male : Female	1 : 1.4.4	1 : 3.3
Age	Mean (years)	57.92	57.58
Ethnicity	Chinese	33.3	46.2
	Malay	58.3	15.4
	Indian	8.4	0
	Others	0	38.4
Tumour Size	Mean (cm)	5.53	7.21

Extragastric GISTs reported in Negeri Sembilan were caecal, mesenteric and retroperitoneal in origin and those in Sarawak were mainly from the small bowel and esophagus (Chart-1). More than half of the tumours were larger than 5cm, 58.3% with a mean diameter of 5.53cm in Peninsular and 69.2% in East Malaysia with a mean of 7.21cm. Based on our data, 56% of the tumours in the West had mitotic counts of

more than 5 per 50 high power field compared to 72% in East. According to Fletcher’s risk stratification for malignant potential, a significant proportion of the patients both in Negeri Sembilan and Sarawak fell into the high risk group, 44.4% and 47.1% (Chart-2). All but 2 patients showed positivity towards CD117 in West and 87% were positive for CD117 in East Malaysia.

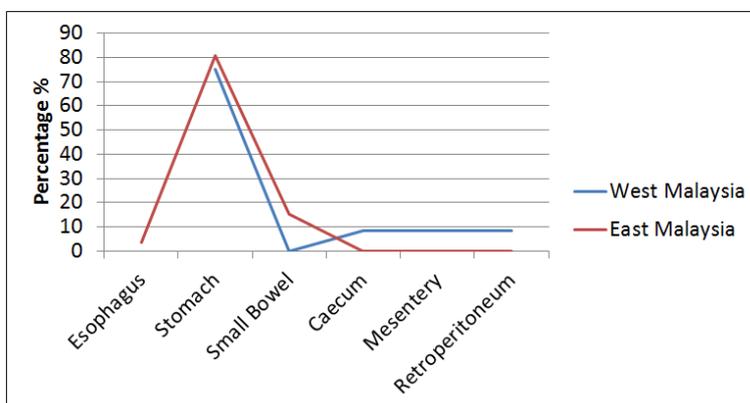


Chart-1: Location of GISTs amongst Malaysians

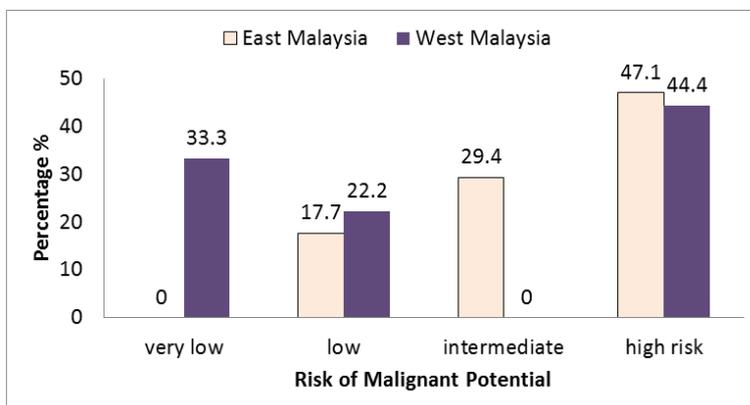


Chart-2: Classification by risk of malignant potential

DISCUSSION

Seven year GIST data from 2 tertiary centres in Malaysia project a small number of patients due to the rarity of the pathology. They portray a similar age at diagnosis, during the sixth decade of life which corresponds to data from other centers locally [2]. In Kuching, GISTs showed Chinese predominance as compared to Malays in Seremban. There are no correlations of GISTs to a particular race, however, this racial predominance is parallel to the major population in these two cities. The ease of access to tertiary healthcare in these localities lead to a higher pick up rate amongst them. Our data corresponds to most reports published with gastric GISTs being the commonest in both regions. However, data from the West shows equal occurrences of GISTs in the fundus, body, lesser curve and greater curve. This result may be insignificant due to our limited number of patients and needs to be studied further with larger patient numbers.

Extragastric GISTs were diagnosed more in the West than East Malaysia, particularly from esophagus, small bowel, caecum, mesentery and retroperitoneum. These tumors comprise 40% of GISTs and are documented to behave more malignantly than gastric tumors. According to the NCCN guidelines from 2007, malignant potential is highest in rectal GISTs followed by duodenal, small bowel and least in gastric [4]. Majority of our patients from both regions were classified as high malignant potential and this was mainly due to the large tumor size at presentation. This is due to the asymptomatic nature of GISTs which only presents when the tumour is of significant size to produce symptoms. Immaterial of malignant potential, gastric GISTs have a low recurrence rate following

surgical resections with negative margins (R₀ resection) [5].

CONCLUSION

GISTs have no variation in demographics between East and West Malaysia except for gender and ethnicity predominance. In view that GISTs are a rare entity, a multi-center approach with a longer period of retrospective or prospective review will enable us to further sanctify our observations.

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