Background

• VEGF inhibitors, including bevacizumab, ramucirumab, sorafenib, sunitinib, regorafenib, and pazopanib, are targeted therapies that can lead to different types of cancer, particularly colon/cancer, hepatocellular carcinoma, and renal cell carcinoma.14

• VEGF inhibitors are particularly known to cause vision changes by binding to a VEGF ligand or receptor and slowing tumor growth1,2,3.4.

• HTN is a major side effect of VEGF inhibitors and HTN occurs because of decreased nitric oxide production and increased peripheral resistance because of endothelial cell dysfunction.1

• The American College of Cardiology (ACC) and American Heart Association (AHA) 2017 HTN guidelines recommend a blood pressure goal of <150/90 mmHg for most patients.12

• Medication labeling for VEGF inhibitors recommends standard pharmacologic management with antihypertensive agents.15

• Bevacizumab, ramucirumab, sorafenib, sunitinib, regorafenib, and pazopanib are VEGF inhibitors used to treat various diseases such as metastatic colorectal cancer, non-small cell lung cancer, and other indications.16

Study Definitions:

- Pharmacologic intervention was defined as:
  - Prescribed antihypertensive agent
  - Increased dose of current antihypertensive agent
  - New antihypertensive agent
  - New VEGF inhibitor
  - Discontinued VEGF inhibitor
  - A combination of the above options

Inclusion Criteria:

- At least 18 years of age
- Received VEGF inhibitors at OLOLRMC inpatient hospital, Mary Bird Preyer Infusion Center, or Louisiana State University North Baton Rouge Infusion Center
- Received VEGF inhibitors between March 1, 2017 to August 31, 2018

Objective

• The purpose of this study is to evaluate Our Lady of the Lake Regional Medical Center’s (OLOLRMC) practices of monitoring, identifying, and treating patients’ Vascular Endothelial Growth Factor (VEGF) inhibitor-associated hypertension (HTN).

Methodology

Study Design:

- Dose supporting, retrospective, single-center chart review

Primary Outcomes:

- Determine if treatment for hypertension caused by VEGF inhibitors is being provided
- Assess time to the first pharmacologic intervention

Secondary Outcomes:

- Assess incidence of hypertension caused by VEGF inhibitors
- Evaluate time to development or exacerbation of hypertension
- Evaluate the time to a second pharmacologic intervention
- Assess the achievement of goal blood pressure (<140/90 mmHg) for patients who received VEGF inhibitor before January 1, 2018 and smokers with hypertension who received VEGF inhibitor after December 31, 2017

Results

• Ninety-three patients developed hypertension and 31 patients were treated for hypertension. Twenty-one patients achieved their respective blood pressure goal.

- There are blood pressure hold parameters to inform physicians if blood pressure is elevated for bevacizumab and ramucirumab.

- Recently, blood pressure hold parameters were updated for sorafenib, sunitinib, regorafenib, and pazopanib.

Conclusion and Future Directions

• Ninety-three patients developed hypertension and 31 patients were treated for hypertension. Twenty-one patients achieved their respective blood pressure goal.

- Calcium channel blockers were the most common antihypertensive agent used.

- There are blood pressure hold parameters to inform physicians if blood pressure is elevated for bevacizumab and ramucirumab. Recently, blood pressure hold parameters were updated for sorafenib, sunitinib, regorafenib, and pazopanib.

- Continue to have nurses contact physicians when blood pressure is elevated prior to receiving VEGF inhibitor and encouraging patients to document blood pressure measurements at home.