The Association of Cocaine Use and Acute Limb Ischemia

Chen, Roy MD[1], Jackson, Mackenzie MD[1], Zuhaili, Bara MD[2], Santiago Rivera, Olga PhD[3]
[1]University of Michigan Medicine Health Sparrow, General Surgery Residency, [2]Michigan Vascular Center, [3]McLaren Flint Hospital

INTRODUCTION

- Our institution noted an increased rate of acute limb ischemia in young patients with concurrent cocaine use.
- The prothrombotic and ischemic effects of cocaine are well documented in the venous, cardiac, and stroke literature [1,2].
- The available literature of the effects of cocaine on limb ischemia is less well documented.
- A review of pubmed, institutional library, and google scholar reveal several case studies and two case series with limited patient populations [3-5].
- Our review is the largest retrospective case series to date.
- The objective of this study was to better elucidate the natural history of cocaine associated acute limb ischemia.

METHODS

- We performed a cross-sectional, retrospective chart review at a single center from January 2013 to October 30, 2023.
- Data is presented dates back to January 2022 due to EMR data collection issue.
- Our inclusion criteria were: Age > 18 years, Acute limb ischemia of a native artery, patient with cocaine use history disclosure and patients presenting with acute limb ischemia.
- Our exclusion criteria included: Age <18, pregnant patients, acute ischemia of bypass grafts.
- Data was collected regarding demographics, medical comorbidities, additional substance use, PAD history, presentation of their acute ischemic process, and ultimate outcomes.

ID	Age (years)	Sex	Race	Hx DM	Hx PAD	History of clau-dication	Hx HTN	Hx CKD	Hx of Stroke or TIA	Hx of CAD	Tobacco Use	Alcohol Use	Cocaine Use	Additional Substance Use	Home antiplatelet or anticoagulation
1	40	M	African American	No	No	No	No	No	No	No	No	No	Yes	Yes	No
2	54	M	African American	No	No	No	No	No	No	Yes	Yes	No	Yes	No	Yes
3	49	F	African American	Yes	Yes	No	No	No	No	Yes	Former	No	Yes	Yes	Yes - Noncompliant
4	53	M	Caucasian	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes - Noncompliant
5	51	F	Caucasian	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	No	Yes - Noncompliant
6	41	F	Caucasian	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No
7	65	M	African American	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes
				2/7	2/7	0/7	3/7	1/7	0/7	4/7	6/7	3/7	7/7	3/7	2/7

Figure 1: Patient Demographics

ID	Limb	Site	Symptom Duration (Hours)	Interval between Cocaine use and Symptoms (Hours)	Paresthesias at time of presentation	Weakness present at time of evaluation	Paralysis at time of presentation	Pre-op DP Exam	Pre-op PT Exam	Intervention performed
1	Left	Aorto-iliac	12	4	Yes	Yes	No	Signal present	Signal present	Embolectomy
2	Right	Aorto-iliac	3	16	Yes	Yes	No	Absent	Absent	Embolectomy
3	Left	Aorto-iliac	96	Unknown	Yes	Yes	Yes	Absent	Absent	Amputation
4	Right	Tibial	120	Unknown	Yes	No	No	Signal present	Signal present	Lytic
5	Right	Femoral	48	24	No	No	No	Signal present	Signal present	Lytic
6	Left	Brachial	6	Unknown	Yes	Yes	No	Absent	Absent	Embolectomy
7	Left	Tibial	48	Unknown	Yes	Yes	No	Absent	Absent	Embolectomy
8	Left	Tibial	48	Unknown	Yes	Yes	No	Signal present	Signal present	Embolectomy

Figure 2: Limb Ischemia Characteristics

ID	Post op DP	Post Op PT	Length of Hospital Stay (Days)	1 year operation free limb salvage	Indication:
1	Signal present	Signal present	12	Yes	n/a
2	Signal present	Signal present	22	No	fasciotomy
3	n/A	n/A	16	No	Index amputation
4	Signal present	Signal present	11	No	Amputation
5	Signal present	Signal present	7	No	1 year required bypass
6	Signal present	Signal present	7	No	Death - CVA, comfort measures
7	Signal present	Signal present	32	No	Amputation, Death - Aspiration, failure to wean from vent, comfort measures
8	Signal present	Signal present	16	No	Amputation

Figure 3: Outcomes

RESULTS

- 17 patient encounters were identified based on ICD code. 9 patients were excluded on chart review due to a lack of true acute limb ischemia. Ultimately 7 patients with 8 encounters were identified and evaluated.
- The average onset of symptoms prior to evaluation was 47 hours.
- An average of 14.5 hours between cocaine use and onset of symptoms was reported when timing of cocaine use was elucidated.
- 7 encounters (87.5%) had paresthesias at time of evaluation.
- 6 (75%) had some motor impairment with 1 (12.5%) presenting with paralysis.
- 2 patients underwent thrombolysis (25%), 5 underwent thrombectomy (62.5%), 1 underwent index amputation (12.5%).
- At 1 year, 2 encounters had durable limb preservation (28%), 1 required a tibial bypass (14%), 3 required eventual amputation (42%), 2 ultimately passed during their index hospitalization (28%).

DISCUSSION

- Patients at our institution who presented with concurrent limb ischemia and cocaine use had poor outcomes compared to those with acute limb ischemia without cocaine use as well as previously reported rates [3].
- The exact reason why is not able to be elucidated in this small sample size but may be secondary to the delayed presentation of these patients vs a physiologic difference in disease pathology.

CONCLUSION

- Further research may evaluate the true natural history of cocaine associated limb ischemia as well as the histologic changes of cocaine on arteries.
- Our institution will continue reviewing our internal data to increase sample size and power.

REFERENCES