

# Clinical and Endoscopic Characterization of Gastrointestinal Kaposi's Sarcoma in an Institution in Southwestern Colombia between 2011 and 2020

Catalina Maldonado,<sup>1</sup>  Diego Estupiñán,<sup>2</sup>  Mauricio Sepúlveda,<sup>3</sup>  Andrés Gempeler-Rojas,<sup>4</sup>  Isabel Zapata,<sup>5</sup>  Nelson Rojas,<sup>6</sup>   
Carlos Arturo Rojas.<sup>1</sup> 

## OPEN ACCESS

### Citation:

Maldonado C, Estupiñán D, Sepúlveda M, Gempeler-Rojas A, Zapata I, Rojas N, Rojas CA. Clinical and Endoscopic Characterization of Gastrointestinal Kaposi's Sarcoma in an Institution in Southwestern Colombia between 2011 and 2020. *Revista. colomb. Gastroenterol.* 2023;38(3):271-277. <https://doi.org/10.22516/25007440.1039>

<sup>1</sup> Gastroenterologist, Fundación Valle del Lili. Cali, Colombia.

<sup>2</sup> Internal medicine resident, Fundación Valle del Lili. Cali, Colombia.

<sup>3</sup> Gastroenterologist, Fundación Valle del Lili. Cali, Colombia.

<sup>4</sup> MD. MSc. Methodological advisor, researcher, Fundación Valle del Lili. Cali, Colombia.

<sup>5</sup> General practitioner, hospitalist in endocrinology, outpatient clinic, Fundación Valle del Lili. Cali, Colombia.

<sup>6</sup> Research assistant physician in gastroenterology, clinical research center, Fundación Valle del Lili. Cali, Colombia.

\*Correspondence: Carlos Arturo Rojas.  
[crojo16@yahoo.com](mailto:crojo16@yahoo.com)

Received: 02/03/2023

Accepted: 20/04/2023



## Abstract

Kaposi's sarcoma is an angioproliferative neoplasm associated with the human herpesvirus 8. According to the clinical characteristics and the degree of immunosuppression, there are four epidemiological forms: classic, endemic, iatrogenic, and epidemic. The latter is associated with acquired immunodeficiency syndrome (AIDS) and 40% GI involvement. There is little epidemiological, clinical, and endoscopic evidence of the disease. This study sought to characterize this condition in a Colombian population and compare the findings with publications from other countries. One hundred thirty-five records of patients who consulted between 2011 and 2020 for Kaposi's sarcoma were reviewed, of which 24 had GI involvement. Epidemiological, clinical, endoscopic, and treatment characteristics were obtained. Twenty-two patients were men. There were 21 patients infected with human immunodeficiency virus (HIV; 87.5%) and 19 receiving antiretroviral therapy (90%); 33.3% had HIV viral load > 100,000 copies/mL. The CD4+ count was <50 cells/μL in 28.6% of cases, between 50 and 100 cells/μL in 19.0%, and between 100 and 200 cells/μL in 14.4%. The rate of infection by other opportunistic infections was 41.7%. There were GI symptoms in 33% of the patients, and the most frequent were hematochezia, abdominal pain, nausea, and diarrhea. Most had concomitant skin lesions (70.8%). GI lesions were located mainly in the oropharynx (41.7%), stomach (20.8%), and colon (16.7%). The most common endoscopic finding was maculopapular erythema. This article provided insight into the local epidemiology of gastrointestinal Kaposi's sarcoma. In contrast to studies in other populations, GI symptoms were more frequent in this one, and there was a difference in endoscopic findings. Studies with larger populations are needed.

## Keywords

Kaposi, sarcoma, gastrointestinal neoplasms, endoscopy.

## INTRODUCTION

Kaposi's sarcoma (KS) is a multifocal angioproliferative neoplasm associated with human herpesvirus 8 (HHV-8). It is characterized by the formation of localized or disseminated inflammatory lesions predominantly on the skin and mucous membranes, which can also affect internal organs<sup>(1-3)</sup>. The epidemiology of the disease varies according to the demographic characteristics and the degree of immunosuppression

of the patients, variables that also impact the clinical picture<sup>(1,2,4)</sup>. There are four epidemiological forms: classic, endemic, iatrogenic, and epidemic. It was initially reported in the early 1980s in almost a third of patients with acquired immunodeficiency syndrome (AIDS), inferring its relationship with a state of profound immunocompromise. The clinical course is initially indolent but frequently becomes aggressive and involves viscera<sup>(4)</sup>. The iatrogenic form is observed in organ transplant recipients and patients with prolonged

immunosuppression due to other causes. The incidence of KS in transplant recipients is 400-500 times higher than in the general population. Manifestations are usually localized but may involve organs<sup>(2,4)</sup>.

The epidemic variant presents with extensive mucocutaneous and visceral involvement. It begins as macules that later form plaques and later nodules and tumors. The latter involves lymph nodes and visceral organs, mainly respiratory and gastrointestinal. Oral lesions on the palate and gums are common and may result in dysphagia and secondary infections. The gastrointestinal tract is the most common extracutaneous location, and its lesions are usually asymptomatic. Sometimes, they cause abdominal pain, weight loss, nausea, emesis, malabsorption, diarrhea, bleeding, or obstruction, and their presence is confirmed endoscopically<sup>(2,5-8)</sup>.

Gastrointestinal involvement (KS-GI) can be present in up to 40% of patients with KS and AIDS<sup>(6)</sup>. Furthermore, it is known that 50% of patients with cutaneous and 75% with oral manifestations will develop gastrointestinal lesions in the future<sup>(9)</sup>.

The endoscopic appearance of KS is variable, with lesions that can be red maculopapular or polypoid/nodular and darker, and the latter are the most common, mainly in the stomach. In severe disease, it appears as a friable central or ulcerated umbilication<sup>(8,10,11)</sup>.

The prognosis of KS-GI is poor, both for the endemic form and those related to immunosuppression, with a 6-month survival of 40%<sup>(8,11)</sup>. Likewise, mortality is higher in patients with CD4 T lymphocyte counts <150 cells/ $\mu$ L<sup>(12)</sup>.

Some clinical variables serve as predictors of suffering from KS-GI. Among them, the CD4+ T lymphocyte count <100 cells/ $\mu$ L, men who have sex with men (MSM), and cutaneous KS have a significant relationship with KS-GI, even in asymptomatic patients. Furthermore, endoscopically severe lesions such as the bulky variety and a high number of lesions ( $\geq 10$ ) are associated with a CD4+ T count <100 cells/ $\mu$ L and human immunodeficiency virus (HIV) viral load (VL) >10,000 copies/ $\mu$ L, respectively<sup>(13)</sup>.

Treatment is dependent on the KS variant. Epidemic KS includes antiretroviral drugs, while iatrogenic forms can be treated with a reduction of immunosuppressive agents. When these measures are ineffective in disseminated or visceral disease, in endemic or classic KS, and without HIV infection, agents directed against the tumor lesion are indicated. The most used are liposomal anthracycline (doxorubicin, daunorubicin) and paclitaxel<sup>(2,5,6)</sup>. Other drugs that are beginning to be relevant due to results in modest clinical studies are imatinib (tyrosine kinase [TK] inhibitor), bevacizumab (antibody against vascular endothelial growth factor [VEGF]), interleukin 12 (IL-12; cytokine that favors the Th1 lymphocyte response), thalidomide, lenalidomide

and pomalidomide (immunomodulatory imides), bortezomib (proteasome inhibitor), and  $\beta$ -blocking agents such as propranolol or timolol<sup>(2)</sup>.

In the literature, there are series that describe the clinical, endoscopic, and histopathological characteristics of patients with KS-GI; however, these studies were conducted in populations other than Latin Americans<sup>(7,8,13)</sup>. In Colombia, some publications have detailed the panorama of epidemic KS, and others report cases of KS-GI<sup>(14-17)</sup>. This study characterized the symptoms, immunological status, endoscopic findings, and therapy used in 24 patients with KS-GI who consulted a tertiary care university hospital in southwestern Colombia between 2011 and 2020.

## METHODS

A cross-sectional descriptive study was carried out based on medical records of patients with KS-GI who attended a high-complexity university hospital in Cali, Colombia, between January 2011 and January 2020 to evaluate the clinical characteristics and endoscopic examinations of affected subjects.

The inclusion criteria were: age >18 years and diagnosis of KS-GI (ICD-10: C46.0, C46.4, B21.0). Those who lacked an endoscopic record were excluded. The institutional ethics committee approved this study before its initiation.

Clinical variables were collected, such as sex, age, origin, pathological history, history of HIV infection or autoimmune diseases, HIV viral load, CD4+ T lymphocyte count, presence of opportunistic infections, and pharmacological history, including highly active antiretroviral therapy (HAART) and chemotherapy. The symptoms reported by the patients in the consultation, the location of the lesion where the histopathological diagnosis of KS-GI was made, and its endoscopic characteristics were also recorded.

All variables collected are described and summarized. The Shapiro-Wilk test was used to determine the distribution of quantitative variables, and these were summarized with measures of central tendency and dispersion according to their distribution. Categorical variables were summarized as proportions.

## RESULTS

One hundred thirty-five patients diagnosed with KS were identified, of which 24 met the KS-GI compromise criterion. Twenty-two of them were male (91.7%). The median age was 36 years (interquartile range [IQR] = 29.5-43). These and other fundamental characteristics of the population studied are shown in **Table 1**.

Twenty-one patients had HIV infection (87.5%), which constitutes cases of epidemic variant KS. Of them, 19 were

receiving HAART (90.4%). Six different antiretroviral therapy regimens were identified; the most common was abacavir + lamivudine + lopinavir + ritonavir.

**Table 1.** Sample characteristics

	n	%
Sex		
- Female	2	8.3
- Male	22	91.7
Age*		
- Median	36	
- Minimum	29.5	
- Maximum	43	
Comorbidities		
- HIV infection	21	87.5
- Arterial hypertension	2	8.3
- Type 2 diabetes mellitus	1	4.2
- Chronic renal failure	2	8.3
- Smoking	1	4.2
- Inflammatory bowel disease	1	4.2

\*Age in years. Table prepared by the authors.

In the group with HIV infection, two of the 21 patients had undetectable viral loads (9.5%), and six had loads greater than 100,000 copies/mL (28.5%). Regarding the CD4+ T lymphocyte count, 28.6% had a count of less than 50 cells/ $\mu$ L at the time of KS diagnosis, 16.7% had between 50 and 100 cells/ $\mu$ L, and 19% had a count greater than 200 cells/ $\mu$ L. 41.6% of the patients suffered from other opportunistic infections; the most frequent were those caused by *Cryptococcus* spp. (16.7%), *Histoplasma capsulatum* (12.5%) and *Toxoplasma gondii* (8.3%). On the contrary, there was no identification of opportunistic microorganisms in 58.3% of the patients (Table 2).

Regarding clinical characteristics, 70.8% of patients with KS-GI had skin lesions, and two-thirds were gastrointestinally asymptomatic. The most frequently reported symptoms were abdominal pain, hematochezia, nausea, and diarrhea for more than a month. The lesions were located most often in the oropharynx (41.7%), followed by the stomach (20.8%), colon (16.7%), small intestine, and rectum (8.3%). The main endoscopic description was maculopapular erythema (Figure 1), followed by nodules (Figure 2) and exophytic lesions. However, the initial report was unavailable in several patients (Table 3).

**Table 2.** Immunological characteristics

	n	%
HIV viral load		
- Undetectable	2	9.6
- 40-100,000	5	23.8
- More than 100,000	7	33.3
- ND	7	33.3
CD4+ T lymphocyte count		
- Under 50	6	28.6
- 50-100	4	19.0
- 100-200	3	14.4
- More than 200	4	19.0
- ND	4	19.0
Infections associated with immunosuppression		
- Present	10	41.7
- Absent	14	58.3
Reported opportunistic infections		
- <i>Cryptococcus</i> spp.	4	16.7
- <i>Histoplasma capsulatum</i>	3	12.5
- <i>Toxoplasma gondii</i>	2	8.3
- Pulmonary tuberculosis	1	4.2
- <i>Mycobacterium avium</i> complex	1	4.2
- Disseminated cytomegalovirus	1	4.2
- <i>Molluscum contagiosum</i>	1	4.2

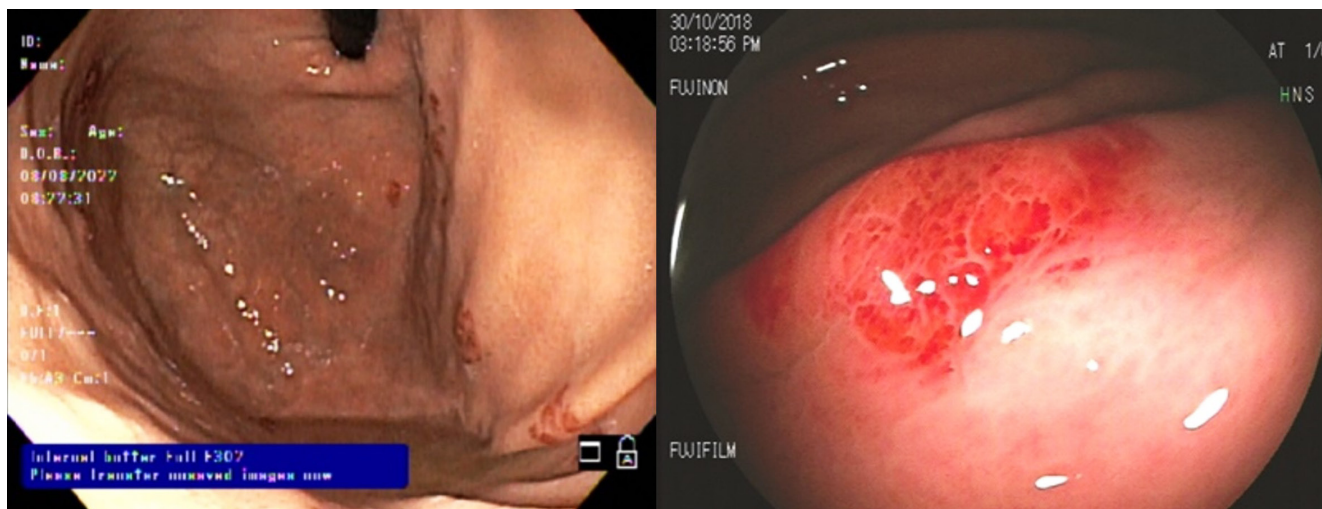
ND: no data. Table prepared by the authors.

In addition to antiretroviral therapy, 58.3% of patients received antineoplastics; doxorubicin treatment was reported in 12 individuals with KS-GI. The presence of other comorbidities in addition to HIV infection was uncommon: one person with type 2 diabetes mellitus, two with chronic kidney disease, two with high blood pressure, and one with inflammatory bowel disease. Additionally, two were smokers, and one patient used corticosteroids chronically.

## DISCUSSION

This study sought to characterize the population affected with KS-GI who attended a referral university hospital in southwestern Colombia between 2011 and 2020. The identified patients were mainly early adults, and the predominant epidemiological form of KS was epidemic. Immunological variables such as low CD4+ T cell count and high HIV VL





**Figure 1.** Maculopapular erythema. Authors' archives.



**Figure 2.** Nodular, hyperpigmented lesion. Authors' archives.

were directly related to KS-GI frequency. The upper gastrointestinal tract was the most involved, and maculopapular erythema was the most frequent endoscopic finding.

The rate of patients diagnosed with HIV infection was 87.5%, very similar to that observed in previous case reports of KS-GI<sup>(8,13)</sup>. Within the population evaluated, there was a greater male representation associated with a higher incidence of KS in men than in women and a significant prevalence of HHV-8 infection in MSM<sup>(2,18-21)</sup>.

Immunological variables such as low CD4+ T lymphocyte count and high HIV VL are related to KS-GI. A study

published by Nagata et al. evaluated 33 patients with KS-GI and found that the majority had CD4+ below 200 cells/ $\mu$ L: 63.7% with CD4 <100 cells/ $\mu$ L and 24.2% between 100 and 199 cells/ $\mu$ L. This same publication reported a positive correlation between patients with KS-GI and high HIV viral loads: 54.6% with VL >100,000 copies/mL and 21.1% with VL between 40 and 10,000 copies/mL<sup>(13)</sup>. These data are similar to the present study, in which more than half of the patients had a CD4+ T lymphocyte count <200 cells/ $\mu$ L. In addition, about half of the patients had opportunistic infections. A likely explanation is the high susceptibility to disseminated KS (e.g., gastrointestinal) in scenarios of profound immunosuppression, such as AIDS<sup>(5,9,12)</sup>.

Gastrointestinal symptoms were observed in one-third of the subjects evaluated (33.3%); however, other publications report fewer (15-21%)<sup>(8,13)</sup>. One hypothesis for this contrast is that non-specific symptoms such as abdominal pain, nausea, and chronic diarrhea predominated in the subjects of our study, which may have causes other than KS-GI in the context of severe immunosuppression and HIV infection. Besides, a high occurrence of KS with cutaneous manifestations was observed among those with gastrointestinal involvement, a finding similar to that of other authors<sup>(8,13)</sup>.

The primary location of the lesions was the upper gastrointestinal tract, especially the oropharynx. This information agrees with various cases in which commitment at this level was also more frequent<sup>(6-9,11,12,22)</sup>. In the present study, maculopapular erythema was the most repeated endoscopic finding; still, in the literature, the polypoid/nodular lesion is the most common<sup>(8,13)</sup>. This difference could be related to the sample size; the endoscopic assessment of

**Table 3.** Clinical and endoscopic characteristics

	n	%
Skin lesions		
- Present	17	70.8
- Absent	7	29.2
Gastrointestinal symptoms		
- Absent	16	66.7
- Present	8	33.3
Symptom		
- Abdominal pain	5	20.8
- Nausea	2	8.3
- Emesis	1	4.2
- Diarrhea <1 month	0	0.0
- Diarrhea ≥1 month	2	8.3
- Constipation <1 month	1	4.2
- Constipation ≥1 month	0	0.0
- Melenas	0	0.0
- Hematochezia	6	25.0
Location of the gastrointestinal involvement		
- Oropharynx	10	41.7
- Esophagus	1	4.2
- Stomach	5	20.8
- Small intestine	2	8.3
- Colon	4	16.7
- Rectum	2	8.3
Endoscopic findings		
- Maculopapular erythema	7	29.2
- Polyps	1	4.2
- Nodules	3	12.5
- Exophytic lesions	3	12.5

Table prepared by the authors.

lesions is subjective, and there may be variations in the semiological interpretation. Subsequent studies should contrast what is noted in this study.

Only three cases (12.5%) corresponded to non-epidemic KS. In the literature, some studies describe mucosal involvement due to iatrogenic and classic KS with rates of 73.6% and 26.4%, respectively. The most common locations are the oral cavity, stomach, rectum, small intestine, and colon<sup>(23)</sup>. In our cohort, there were no details on the topographic characteristics of this group of patients.

This study had several limitations: only 24 subjects with KS-GI were identified over ten years, probably related to underdiagnosis and difficulties accessing highly complex services in Colombia. Furthermore, some patients had previous therapies that could have modified the clinical manifestations during the gastroenterological evaluation. Therefore, an attempt was made to evaluate the records of each patient from the first contact with health personnel (internal medicine, infectious diseases, general medicine, emergency medicine). The proportion of patients with non-epidemic KS-GI was also small. Despite the increased use of various immunomodulators, biological therapies, and organ transplants, epidemic KS is more common than the iatrogenic or classic variant<sup>(21)</sup>.

## CONCLUSION

In our study, KS-GI associated with epidemic KS was the most common. The high prevalence of skin manifestations concomitant with lesions in the gastrointestinal tract is highlighted. The findings of the most frequent anatomical sites, the lesions' main characteristics, and associated factors that can guide the search in this group of patients are described. High HIV viral loads and low CD4 T lymphocyte counts should be considered in the evaluations of patients with immunosuppression since the finding of KS-GI results in a worse prognosis.

## Conflicts of interest

None of the authors have conflicts of interest.

## REFERENCES

1. Brambilla L, Tournalaki A, Genovese G. Iatrogenic Kaposi's Sarcoma: a Retrospective Cohort Study in an Italian Tertiary Care Centre. *Clin. Oncol.* 2017;29(10):e165-e171. <https://doi.org/10.1016/j.clon.2017.05.008>
2. Cesarman E, Damania B, Krown SE, et al. Kaposi sarcoma. *Nat Rev Dis Primers.* 2019;5(1):9. <https://doi.org/10.1038/s41572-019-0060-9>
3. Vangipuram R, Tyring SK. Epidemiology of Kaposi sarcoma: review and description of the nonepidemic variant.

- Int J Dermatol. 2019;58(5):538-542.  
<https://doi.org/10.1111/ijd.14080>
4. Curtiss P, Strazzulla LC, Friedman-Kien AE. An Update on Kaposi's Sarcoma: Epidemiology, Pathogenesis and Treatment. *Dermatol. Ther. (Heidelb)*. 2016;6(4):465-470.  
<https://doi.org/10.1007/s13555-016-0152-3>
  5. Radu O, Pantanowitz L. Kaposi sarcoma. *Arch. Pathol. Lab. Med.* 2013;137(2):289-294.  
<https://doi.org/10.5858/arpa.2012-0101-RS>
  6. Shah SB, Kumar KS. Kaposi's Sarcoma Involving the Gastrointestinal Tract. *Clin Gastroenterol Hepatol.* 2008;6(2):A20.  
<https://doi.org/10.1016/j.cgh.2007.11.013>
  7. Chung CY, Park SW, Myung E, Cho DK, Song YA, Park KJ, et al. AIDS-related gastrointestinal kaposi sarcoma in Korea: a case report and review of the literature. *Korean J. Gastroenterol.* 2012;60(3):166-171.  
<https://doi.org/10.4166/kjg.2012.60.3.166>
  8. Carmo J, Chaves Marques S, Bispo M, Pinto D, Chagas C. Clinical and Endoscopic Features of Gastrointestinal Kaposi Sarcoma: A Single-Center Portuguese Experience over the Last Decade. *GE Port. J. Gastroenterol.* 2017;24(5):219-226.  
<https://doi.org/10.1159/000461592>
  9. Restrepo CS, Ocazone D. Kaposi's sarcoma: Imaging overview. *Semin. Ultrasound, CT MRI.* 2011;32(5):456-469.  
<https://doi.org/10.1053/j.sult.2011.03.007>
  10. Lee AJ, Brenner L, Mourad B, Monteiro C, Vega KJ, Munoz JC. Gastrointestinal Kaposi's sarcoma: Case report and review of the literature. *World J. Gastrointest Pharmacol Ther.* 2015;6(3):89-95.  
<https://doi.org/10.4292/wjgpt.v6.i3.89>
  11. Friedman SL, Wright TL, Altman DF. Gastrointestinal Kaposi's sarcoma in patients with acquired immunodeficiency syndrome. Endoscopic and autopsy findings. *Gastroenterology.* 1985;89(1):102-108.  
[https://doi.org/10.1016/0016-5085\(85\)90750-4](https://doi.org/10.1016/0016-5085(85)90750-4)
  12. Parente F, Cernuschi M, Orlando G, Rizzardini G, Lazzarin A, Bianchi Porro G. Kaposi's sarcoma and AIDS: Frequency of gastrointestinal involvement and its effect on survival: A prospective study in a heterogeneous population. *Scand J Gastroenterol.* 1991;26(10):1007-1012.  
<https://doi.org/10.3109/00365529109003949>
  13. Nagata N, Shimbo T, Yazaki H, Asayama N, Akiyama J, Teruya K, et al. Predictive Clinical Factors in the Diagnosis of Gastrointestinal Kaposi's Sarcoma and Its Endoscopic Severity. *PLoS One.* 2012;7(11):6-12.  
<https://doi.org/10.1371/journal.pone.0046967>
  14. Saldarriaga-Cantillo A, Bravo LE, Londoño Ó, García LS, Collazos P. Vigilancia epidemiológica del complejo VIH/SIDA a través del análisis de tendencia de la incidencia del sarcoma de Kaposi. *Colomb. Med.* 2012;43(4):273-280.
  15. Garcia A, Olivella F, Valderrama S, Rodríguez G. Kaposi's sarcoma in Colombia. *Cancer.* 1989;64(11):2393-2398.  
[https://doi.org/10.1002/1097-0142\(19891201\)64:11<2393::AID-CNCR2820641133>3.0.CO;2-9](https://doi.org/10.1002/1097-0142(19891201)64:11<2393::AID-CNCR2820641133>3.0.CO;2-9)
  16. Zapata Laguado MI, Aponte Monsalve JE, Santos JH, Preciado J, Mosquera Zamudio A, Garza Acosta C. Primary Gastrointestinal Kaposi's Sarcoma in a Patient with Human Immunodeficiency Virus. *Case Rep. Oncol.* 2018;11(3):638-647.  
<https://doi.org/10.1159/000492715>
  17. Jiménez K, Martínez J, Hernández G, Garzón M, Hormaza N, Lizarazo JI, et al. Tres variedades de sarcoma de Kaposi con compromiso gastrointestinal. *Rev Colomb Gastroenterol.* 2016;30(3):342-6.  
<https://doi.org/10.22516/25007440.59>
  18. Senior K. Kaposi's sarcoma: the persistent opportunist. *Lancet Oncol.* 2008;9(8):705.  
[https://doi.org/10.1016/S1470-2045\(08\)70187-6](https://doi.org/10.1016/S1470-2045(08)70187-6)
  19. Casper C, Krantz E, Selke S, Kuntz SR, Wang J, Huang ML, et al. Frequent and asymptomatic oropharyngeal shedding of human herpesvirus 8 among immunocompetent men. *J Infect Dis.* 2007;195(1):30-36.  
<https://doi.org/10.1086/509621>
  20. Eltom MA, Mbulaiteye SM, Dada AJ, Whitby D, Biggar RJ. Transmission of human herpesvirus 8 by sexual activity among adults in Lagos, Nigeria. *AIDS.* 2002;16(18):2473-2478.  
<https://doi.org/10.1097/00002030-200212060-00014>
  21. Grabar S, Costagliola D. Epidemiology of Kaposi's Sarcoma. *Cancers (Basel).* 2021;13(22):5692. <https://doi.org/10.3390/cancers13225692>
  22. Le Mouel JP, Chatelain D, Hautefeuille V. Gastrointestinal: Disseminated Kaposi's sarcoma. *J Gastroenterol Hepatol.* 2018;33(7):1309.  
<https://doi.org/10.1111/jgh.14106>
  23. Brambilla L, Maronese CA, Bortoluzzi P, Barberi F, Tourlaki A. Mucosal Kaposi's sarcoma in HIV-negative patients: a large case series from a single, tertiary referral center in Italy. *Int J Dermatol.* 2021;60(9):1120-1125.  
<https://doi.org/10.1111/ijd.15557>



**Available in:**

<https://www.redalyc.org/articulo.oa?id=337782275004>

How to cite

Complete issue

More information about this article

Journal's webpage in redalyc.org

Scientific Information System Redalyc  
Diamond Open Access scientific journal network  
Non-commercial open infrastructure owned by academia

Catalina Maldonado, Diego Estupiñán, Mauricio Sepúlveda,  
Andrés Gempeler-Rojas, Isabel Zapata, Nelson Rojas,  
Carlos Arturo Rojas.

**Clinical and Endoscopic Characterization of  
Gastrointestinal Kaposi's Sarcoma in an Institution in  
Southwestern Colombia between 2011 and 2020**  
**Caracterización clínica y endoscópica del sarcoma de  
Kaposi gastrointestinal en una institución del  
suroccidente colombiano entre 2011 y 2020**

*Revista colombiana de Gastroenterología*  
vol. 38, no. 3, p. 271 - 276, 2023  
Asociación Colombiana de Gastroenterología,  
**ISSN:** 0120-9957  
**ISSN-E:** 2500-7440

**DOI:** <https://doi.org/10.22516/25007440.1039>