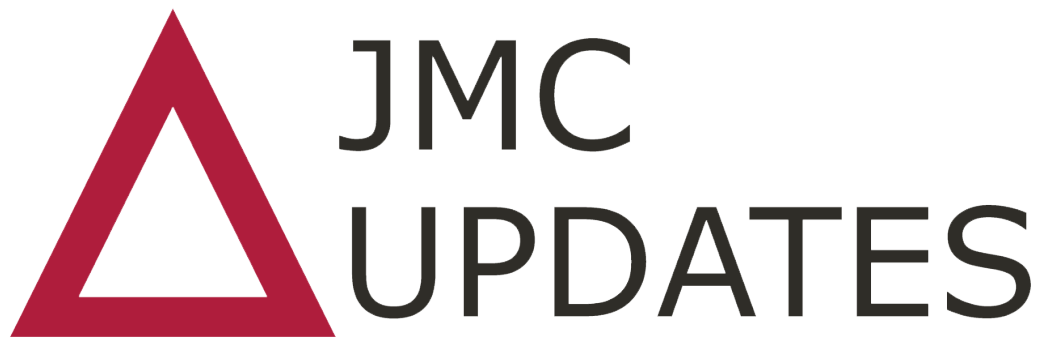




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Taenia Saginata At Appendectomy Specimen

Tolga Kalayci¹, Murat Kartal¹,

¹ MD., Erzurum Regional Education and Research Hospital, Department of General Surgery, Erzurum, Turkey.

ABSTRACT

Acute appendicitis due to parasites is a rare topic. In this case report, we aimed to present the diagnosis and treatment process of a case of *Taenia saginata*, which we found in an appendectomy specimen. A 28-year-old farmer male was admitted to the Emergency Department of Erzurum Regional Training and Research Hospital with complaints of abdominal pain, nausea and vomiting lasting for two days in October 2019. After physical examination, laboratory tests and ultrasonography evaluation, the patient was diagnosed with acute appendicitis. Laparoscopic appendectomy was performed. No postoperative complications developed. Histopathological examination of the appendix specimen showed inflamed acute appendicitis containing segments of *Taenia saginata*. No problem was observed in the follow-up of the patient who was started on antiparasitic treatment.

Keywords: appendicitis; parasitic infections; taenia saginata

INTRODUCTION

Acute appendicitis (AA) is the most common cause of acute abdomen in patients admitted to the emergency department in all age groups. The symptoms and physical findings of the patients are diagnostic, while laboratory findings and imaging tools aim to support the diagnosis of acute appendicitis.¹

The main underlying cause in the pathogenesis is the obstruction of the appendix lumen. The most common cause of this obstruction is lymphoid hyperplasia in children, while fecaliths in adult patients. In addition, there are rare causes such as obstruction with tumors, parasites or fruit seeds.

The most common parasite detected in appendectomy specimen is *Enterobius vermicularis*. *Taenia* sp., *Schistosoma* sp., *Entamoeba histolytica*, *Ascaris lumbricoides*, and *Balantidium coli* are other rare parasites that cause acute appendicitis.² Parasitic infections are more common in tropical regions and developing countries such as in our country. They are frequently located in the gastrointestinal tract. *Taenia saginata*, known as beef tapeworm, is transmitted to humans by consuming raw or undercooked meat. The most common symptom is the

appearance of proglottids in the stool. In severe infections, symptoms such as diarrhea, nausea, abdominal pain, weight loss can be seen. Rarely, it can cause AA by obstructing the appendix lumen.

In this case report, we aimed to present the diagnosis and treatment process of a case of *Taenia saginata*, which we found in an appendectomy specimen.

CASE REPORT

A 28-year-old farmer male was admitted to the Emergency Department of Erzurum Regional Training and Research Hospital, Erzurum, Turkey with complaints of abdominal pain, nausea and vomiting lasting for two days in October 2019. The patient had no history of surgery and additional disease. On evaluation, vital findings of the patient were as follows: blood pressure: 124/75 mm Hg, pulse rate: 98 beats per minute, oxygen saturation on room air: 97%, and body temperature: 37.8° Celsius. On abdominal physical examination, there was tenderness and rebound at right lower quadrant.

There was no laboratory pathology except high C-reactive protein (CRP) level (46 mg/L) and high leukocyte count (13,600/mm³). On ultrasonography (USG), an appendix tissue with 10 mm diameter and peri-appendicular inflammation was

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Correspondence Author: Tolga KALAYCI, M.D, Erzurum Regional Education and Research Hospital, Department of General Surgery, Erzurum, Turkey. **E-mail:** dr.tolgakalayci@gmail.com, **Phone:** +90 542 219 41 61.

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seen. The patient was taken to emergency surgery with a pre-diagnosis of AA. On exploration, a long, inflamed appendix tissue with increased vascularity was observed and was compatible with acute appendicitis. Laparoscopic appendectomy was performed. One drain was placed in the Douglas's pouch to drain seropurulent fluid accumulated in the pelvis.

After operation, the patient was followed in the service. 3rd generation cephalosporin (intravenous ceftriaxone 1 g/every 12 hours) was started. Oral feeding was reinstated six hours after the operation. The drain was removed on the second postoperative day, and he was discharged on the third day of his admission because his oral intake was normal, his abdominal examination was comfortable, and his inflammatory parameters decreased to normal levels. In the pathological evaluation of the resection material an inflamed appendix tissue with increased diameter and vascularity was observed. In addition, histopathological findings showed flattened segments of *Taenia saginata* (Figure 1). No evidence of malignancy were seen in the specimen. The patient was treated with single doses of praziquantel (10 mg/kg). The patient was called for follow-up in the third month after the operation and it was seen that there was no problem in this control.

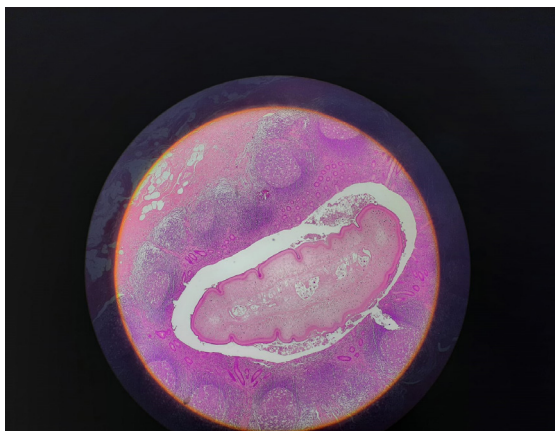


Figure 1. Histopathological image of the appendix specimen.

DISCUSSION

Acute appendicitis is an emergency surgical problem seen at all ages. Most of the patients present to emergency clinics with typical history and physical examinations. While laboratory tests and imaging tools help to diagnose in most patients, acute appendicitis cannot be diagnosed in a small number of patients despite all examinations.¹

The exact causes of acute appendicitis are unknown and possibly multifactorial including genetic factors, foreign bodies, fecal material, abdominal trauma, bacterial infection, lymphadenitis and obstruction of the appendix lumen.³ Rare

cases may be due to intestinal helminthic parasites such as *Entamoeba histolytica*, *Schistosoma* sp., *Taenia* sp., *Ascaris lumbricoides* (Ascaris), and very rarely, *Balantidium coli* by accidental insertion into the appendix.⁴

Parasitic infections are generally seen in developing countries where socio-economic level, education and hygiene conditions are low. Its clinical manifestation ranges from asymptomatic disease to life-threatening disease. One of these clinical manifestations is acute appendicitis-like signs and symptoms. Parasitic infections constitute 0.05-3% of acute appendicitis cases. In the studies of Gupta et al., 2921 appendectomy materials were examined, and the incidence of *Taenia Saginata* was found to be 0.05%.⁵ Silvia et al. analyzed 1600 appendectomy materials and found a single tapeworm case.⁶ Studies examining the relationship between tapeworm and acute appendicitis in the literature are mostly in the form of case reports, like our case report.⁷

The role of parasitic infections in the pathogenesis of acute appendicitis is still controversial and there is still insufficient evidence. It is thought to be secondary to the parasite's complete obstruction of the appendix lumen or to inflammation due to the parasite. In this case presentation, in the pathological examination of the appendectomy specimen, the appendix lumen was completely occluded with *Taenia Saginata*. In addition, eosinophilic reaction was seen at appendix specimen. *Taenia Saginata* is mainly transmitted from raw or undercooked meat. Scolexes entering the human gastrointestinal system attach themselves to the intestinal tissue. Scolexes then transform into proglottids. Gravid proglottids and eggs are excreted with human feces to the environment. Thus, the water and soil are contaminated by the parasite eggs. These eggs can be taken by cattle and humans and cause re-infection. The life cycle of *Taenia Saginata* is shown in Figure 2 (taken from Centers for Disease Control and Prevention).⁸

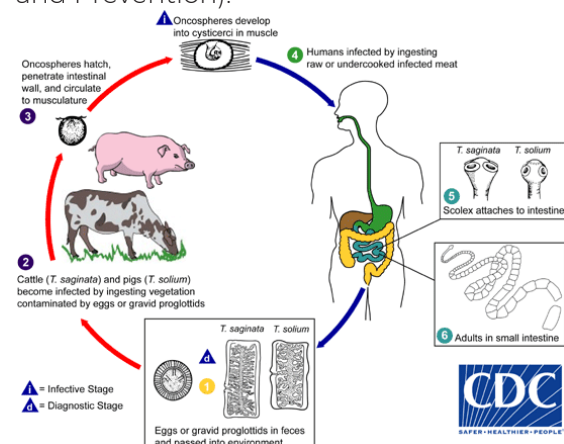


Figure 2. Life cycle of *Taenia Saginata*.⁸

CONCLUSION

Acute appendicitis is an emergency surgical problem seen at all ages. Parasitic infection is a rare cause of acute appendicitis. Histopathological recognition of *Taenia Saginata* is important in developing countries like our country, both in terms of changing eating habits and not disrupting parasite eradication in the postoperative period. The main treatment in acute appendicitis cases due to parasitic infection is appendectomy, and parasitic treatment should be given in the postoperative period.

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A Case of Recurrent Ovarian Adult Granulosa Cell Tumor: Ureter Resection and Ureteroneocystostomy

Abdurrahman Alp Tokalioğlu¹, Fatih Kılıç¹, Burak Ersak¹, Fatih Çelik¹, Efnan Algin²,

Günsu Kimyon Cömert³, Taner Turan⁴, Osman Türkmen³

¹ MD., Ankara Şehir Hastanesi, Sağlık Bilimleri Üniversitesi, Jinekolojik Onkoloji Kliniği, Ankara, Türkiye.

² Assoc. Prof., Ankara Şehir Hastanesi, Sağlık Bilimleri Üniversitesi, Medikal Onkoloji Kliniği, Ankara, Türkiye.

³ Assoc. Prof., Ankara Şehir Hastanesi, Sağlık Bilimleri Üniversitesi, Jinekolojik Onkoloji Kliniği, Ankara, Türkiye.

⁴ Prof., Ankara Şehir Hastanesi, Sağlık Bilimleri Üniversitesi, Jinekolojik Onkoloji Kliniği, Ankara, Türkiye.

ABSTRACT

Ovarian adult granulosa cell tumors (AGCTs) constitute 2-5% of all ovarian cancers. Long-term patient follow-up is important because it tended to late recurrence. Complimentary staging surgery was performed on the patient who was diagnosed with AGCTs after oophorectomy was performed due to an ovarian cyst at the age of 42 in 2014 at the external center. Adjuvant chemotherapy BEP (Bleomycin, Etoposide, Cisplatin) was given to the patient. The patient, who was operated on for pelvic recurrence after 36 months at an external center, was reported as a recurrence of the postoperative pathology of AGCTs and then received salvage chemotherapy (Carboplatin-Paclitaxel). In the follow-up after recurrence surgery, a few masses of 85x65 mm, solid, multicystic, enhancing in the pelvis were identified in the computed tomography at 36 months. Bilateral ureters were reported as dilated with mass compression. Thereupon, an operation decision was made for the patient. Preoperative tumor markers were normal. In the intraoperative observation, an approximately 10 cm hard fixed tumoral mass extending from the left paracolicum surrounding the ureter to the levator anterior, densely attached to the bladder and invading the obliterated umbilical artery was observed. This mass was dissected from the levator muscle with the bladder, the entrance of the left ureter into the bladder was closed and the ureter was cut, and the mass was removed. The right ureter was observed by entering the right retroperitoneum and it was found to be intact. A double-J catheter was placed in the left ureter. The bladder dome was opened and the bilateral ureter orifice was observed. Ureteroneocystostomy was performed by anastomosing the left ureter to the dome of the bladder. No residual tumor was left after surgery. The patient, who had no problem in the follow-up, was discharged on the 7th postoperative day. Pathology of the patient Upon the arrival of AGCTs, medical oncology and radiation oncology were consulted for salvage chemotherapy and pelvic radiotherapy. Multifocal disease and incomplete resection of recurrent disease in AGCT recurrence are associated with reduced overall survival. In the recurrence of AGCTs, it should be aimed not to leave visible tumors in salvage cytoreduction.

Keywords: adult granulosa cell tumor; ureter resection ; ureteroneocystostomy

INTRODUCTION

Ovarian adult granulosa cell tumors (AGCTs) constitute 2-5% of all ovarian cancers and the majority of tumors originating from sex-cord stromal cells. They are mostly hormonally active, rare neoplasms.¹ These tumors, which are generally diagnosed at an early stage, are known to have good prognosis and high survival rates. The disease is characterized by slow growth, local spread, and late recurrences years after initial diagnosis.² 10% of cases present with metastatic disease. The most common metastases are in the liver, lung and bone, while the most common recurrence is in the peritoneal cavity. Management of AGCTs recurrence is combined chemotherapy and, if possible, debulking surgery. The most preferred combination in chemotherapy is the BEP (Bleomycin, Etoposide, Cisplatin)

regimen. Long-term patient follow-up is very important because of its susceptibility to late recurrence.

CASE REPORT

It is understood from the patient history that the patient, who was diagnosed with AGCTs after oophorectomy for ovarian cyst at the age of 42 in 2014, underwent total abdominal hysterectomy and unilateral salpingo-oophorectomy and complementary surgery with pelvic and paraaortic lymph node dissection, and received a combination of BEP as adjuvant chemotherapy at the outer center. In the follow-ups in the outer center, the patient was operated again due to pelvic recurrence 36 months after the first surgery. The patient, whose postoperative pathology was reported

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Correspondence Author: Abdurrahman Alp TOKALIOĞLU, M.D, Ankara Şehir Hastanesi, Sağlık Bilimleri Üniversitesi, Jinekolojik Onkoloji Kliniği, Ankara, Türkiye. **E-mail:** alptokalioğlu@gmail.com **Phone:** +90 532 789 70 96.

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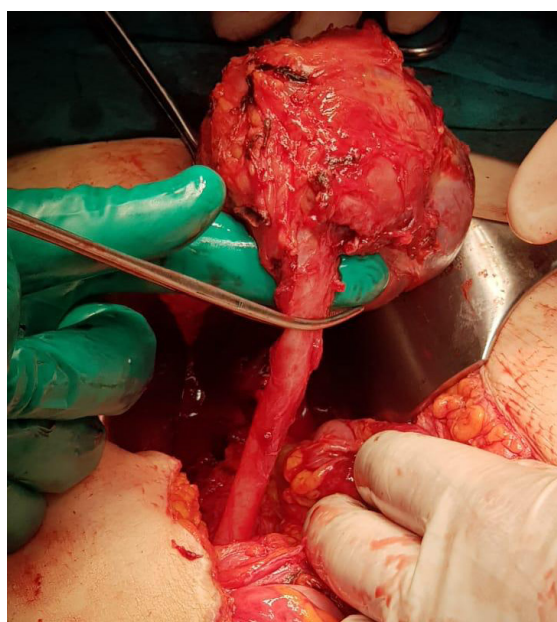


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as AGCTs recurrence, was given postoperative salvage chemotherapy (Carboplatin-Paclitaxel). In a post-recurrence follow-up, lesion areas containing cystic and solid areas of 61x47 mm and 66x43 mm in size were identified in the left lower quadrant, close to the left adnexal area, in the transabdominal ultrasonography in the 36th month. After the diagnosis of the recurrence, the patient, who was diagnosed with COVID-19 and was treated, developed deterioration in thyroid function tests and tachycardia after COVID-19. The patient applied to us again after the tachycardia was treated and the thyroid function tests improved. Computed tomography performed in our hospital in the 38th month following the first recurrence revealed that the mass in the pelvic region had progressed compared to the previous technique. In the final examination, several multicystic, contrast-enhancing mass lesions in the pelvis, the largest of which was 85x65 mm in size, with solid components were identified. The mass on the left lateral of the bladder and the intermediate fat plane were removed. Bilateral ureters are dilated due to mass compressions. Therefore, the decision was made to operate on the patient. Preoperative tumor markers were; CA125: 7 U/mL, CA15.3: 19.1 U/mL, CA19.9: 47.76 U/mL, CEA: 0.79 ng/mL, AFP: 1.90 µg/L. In the intraoperative observation, a hard fixed tumoral structure of approximately 10 cm in size, which invaded and engulfed the obliterated umbilical artery with a dense adhesion to the bladder extending from the left paracolicum to the levator ani, completely surrounding the ureter on the left, was determined (Figure 1).



The obliterated umbilical artery was cut and ligated. The tumor was dissected from the bladder and levator muscle. The entrance of the left ureter to the bladder was closed. The left ureter was cut from the proximal part of the mass and the mass was totally excised. The right ureter was observed by entering the right retroperitoneum and it was determined to be intact. A double J stent was placed in the left ureter. The bladder dome was opened and both ureteral orifices were observed. It was observed that there was flow from the right ureteral orifice. The left ureter was anastomosed to the bladder dome and ureteroneocystostomy was performed (Figure 2). No residual tumor was left after surgery. In the direct urinary system radiograph taken on the first postoperative day, the double J stent was observed



in place. The patient, who had no problems in the postoperative follow-up, was discharged with a catheter on the 7th postoperative day. On the postoperative 23rd day, the patient's residual urine amount was 50cc, so the patient's catheter was removed.

After the pathology result was AGCTs, the patient was evaluated in the tumor council, and it was decided that the patient was to receive 4 cures of salvage BEP treatment and then pelvic radiotherapy by radiation oncology.

DISCUSSION

AGCTs are rare and a slowly progressing ovarian tumors. Although AGCTs have a better prognosis compared to epithelial tumors, recurrences develop

in 20% to 30% of patients, most of them late.³ While the overall survival in stage I varies between 75% and 95%, it is between 22% and 50% in stage III and stage IV.

Surgery is the most important step in the treatment of AGCTs.⁴ Mangili et al. reported that the 5-year survival rate of 97% decreased to 66.8% after 20 years of follow-up.⁵ The development of late recurrence in this disease must be remembered, and recurrences that develop 30 years after diagnosis are presented.^{6, 7} Recurrences usually develop multifocally in the abdomen. The most common sites for extrapelvic recurrences are the liver, small intestine, and spleen. In AGCTs recurrences, maximal debulking significantly increases survival and is significantly better in those who do not have a residual tumor after surgery.⁸ Therefore, it is important to treat patients with recurrent multifocal disease with radical surgery in experienced centers to ensure complete survival and avoid residual disease.^{9, 10} Crew et al. described the effect of cytoreductive surgery, in which complete resection of all lesions is performed, on survival in the presence of diffuse abdominopelvic tumoral lesions in recurrent AGCTs.¹¹ In the study by Dan Zhao et al, an analysis of 34 patients after surgery for recurrence showed that those with progression-free survival (PFS) <61 months had a 3.5 times higher risk of a second recurrence than those ≥61 months. In addition, age at the time of recurrence and post-recurrence treatment approaches were independent risk factors for post-recurrence survival. Those aged >50 years at the time of recurrence had a 3.3 times higher risk of death compared to those aged <50 years. Those who received only chemotherapy after recurrence had a 13.4 times higher risk of death than those who received surgery followed by chemotherapy.¹²

In conclusion, multifocal disease and incomplete resection of recurrent disease are associated with decreased overall survival in adult granulosa cell tumor recurrence. For this reason, salvage cytoreduction in the recurrence of AGCTs should be aimed at not leaving any visible tumor.

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Contributors: TK proposed the study and wrote the paper. All authors contributed to the design and interpretation of the study and to further drafts.

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Fissured geographic tongue evolving in the COVID-19 process: A case report

Erkut Etçioğlu¹, Muhammet Raşit Aydın², Yasin Canbolat³, Hülya Yaşar³

¹MD, Osmaneli Mustafa Selahattin Çetintaş State Hospital, Department of Family Medicine, Bilecik, Turkey.

²MD, Sapanca State Hospital, Department of Family Medicine, Sakarya, Turkey.

³MD, Osmaneli Mustafa Selahattin Çetintaş State Hospital, Emergency Department, Bilecik, Turkey

ABSTRACT

The mechanisms involved in the pathogenesis of SARS-CoV-2 affect different organs and systems, resulting in different clinical manifestations. Geographic tongue (benign migratory glossitis) is an oral lesion of immunological origin, the etiology of which is not known exactly, and occurs as a result of desquamation of the filiform papillae on the dorsal surface of the tongue. Oral involvement may accompany the current clinical manifestations in COVID-19 patients. In this article, a case of fissured geographic tongue evolving during the COVID-19 process is presented.

Keywords: COVID-19; fissured tongue; geographic tongue; SARS-CoV-2.

INTRODUCTION

The clinical spectrum of COVID-19 is expanding with the increase in the number of people suffering from the disease, new symptoms are added to the existing symptoms. The mechanisms defined in viral pathogenesis affect different organs and systems, resulting in different clinical presentations. The basis of these mechanisms is the binding of SARS-COV-2 virus to the Angiotensin Converting Enzyme-2 (ACE-2) receptor and cytokine increase.^{1,2} When the virus binds to this receptor, it enters the cell and inflammatory reactions begin, which makes cells containing the ACE-2 receptor a target for the virus. The ACE-2 receptor is mainly found in type 2 alveolar epithelial cells. Other cells that contain ACE-2 receptors include myocardial cells, kidney proximal tubule cells, bladder urothelial cells, enterocytes of the small intestine, sweat glands, and tongue.³

Geographic tongue (benign migratory glossitis) is defined as an inflammatory, benign oral lesion of immunological origin, the etiology of which is not known exactly. Lesions usually result from desquamation of the filiform papillae on the dorsal surface of the tongue. It has been noted that hypertrophic white lines can be seen around these erythematous patches and thin, erythematous areas on the outside of this line. Fissured tongue can also be called lingua fissurata, lingua plicata, scrotal tongue and grooved tongue. Clinically, there are multiple branched fissures that extend laterally with an anteroposterior orientation.⁴

In COVID-19 patients, it has been shown that the current clinical picture is accompanied by oral involvement. It has been stated that these involvements can be seen on the palate, gingiva, tongue and lips. Oral lesions seen in COVID-19 patients prove that the tissues in the mouth are among the targets of SARS-CoV-2. Studies have reported that the ACE-2 receptor is

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Correspondence Author: Erkut ETÇİOĞLU, M.D., Osmaneli Mustafa Selahattin Çetintaş State Hospital, Department of Family Medicine, Bilecik, Turkey. **E-mail:** erkutetcioglu@gmail.com, **Phone:** +90 553 574 78 37.

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found in high amounts, especially in the tongue.⁵

In this article, a case of fissured geographic tongue developed during the COVID-19 process is presented.

CASE REPORT

A twenty-seven-year-old male patient presented with the complaint of swelling and grooves on his tongue. He stated that the swelling and groove in his tongue started two days ago. In the patient's history, he applied to the emergency department due to loss of taste, cough and fever four days ago, and as a result of the anamnesis and examinations taken here, the nasopharyngeal swab sample was evaluated as COVID-19 suspect and the polymerase chain reaction (PCR) analysis was positive. It was learned that the favipiravir 200 miligram (mg) tablet treatment was started for one day at the 2x8 loading dose and four days at the 2x3 maintenance dose.

In the vital signs of the patient whose general condition is good, oriented and cooperative; fever was 36.5 degrees Celsius, arterial blood pressure was 110/70 mmHg, heart rate was 75 beats/minute, respiratory rate was 18/minute, and oxygen saturation (in room air) was 99%.

There was no feature in her medical history and family history. There was no smoking or alcohol use. On physical examination, geographic appearance of tongue, fissuring and edema were detected. (Figure-1) On the respiratory system auscultation, thin rales were detected in the middle zones of lungs.



Figure-1. Geographic and fissuring appearance of tongue

In laboratory examinations; white blood cell: 6.7 (4.60-10.20) K/uL, hemoglobin: 14.4 (12.20-18.10) g/dl, lymphocyte: 1.65 (0.60-3.40) K/uL eosinophil: 0.004 (0.0-0.7) K/uL platelet: 186000 (100000-450000) K/uL, LDH: 190 (0-247) U/L, sodium: 140 (136-146) mmol/L, potassium: 3.6 (3.5-5.1) mmol/L, calcium: 9.3 (8.8-10.6) mg/dL, urea: 34 (17-43) mg/dL, creatinine: 0.9 (0.67-1.17) mg/dL, D-dimer: 640 (0-500) ugFEU/L, C-reactive protein (CRP): 19.2 (0-5) mg/dL, iron (Fe): 115 (37-158) ug/dL, ferritin: 86 (4.63-204) ug/L, Thyroid Stimulating Hormone (TSH): 3.16 (0.35-4.94) uIU/mL, free T4: 1.14 (0.7-1.48) ng/dL.

Considering that the patient's existing tongue edema and fissured structure developed due to COVID-19 after other preliminary diagnoses were excluded, it was recommended to continue favipiravir treatment. Symptomatically, benzydamine HCl mouthwash treatment was started in the oral 3x1 posology, and he was called for control.

In the control examination performed 14 days later, it was observed that the tongue edema and fissured structure disappeared. (Figure-2) The polymerase chain reaction (PCR) analysis of the nasopharyngeal swab sample was found to be negative.



Figure-2. Normal tongue appearance after treatment

DISCUSSION

Geographic language was first described by Reiter in 1831.⁶ Although the etiology is not known exactly, it has been stated that it can be seen together with many systemic diseases. These diseases include psoriasis, allergy, malnutrition, iron deficiency anemia, thyroid dysfunction

and stress.⁷ As a result of the examinations performed in our case, these diagnoses were ruled out.

COVID-19-related oral involvement was first reported by Chaux-Bodard et al. It has been reported as tongue ulcer that may be caused by vasculitis.⁸ In many studies, ulcer formation has been described as the most common oral lesion. It has been reported that oral lesions such as necrotizing ulcerative gingivitis, papillary hyperplasia, geographic tongue, fissured tongue, and candidiasis can be seen in addition to the ulcer.⁹

Alikhani et al. found that the salivary fluids of patients with geographic tongue had high levels of interleukin 6 and tumor necrosis factor alpha, and that this appearance was caused by inflammation.⁷ Leisman et al. stated that there is a cytokine storm in COVID-19 patients and that their cytokine values, including interleukin 6 and tumor necrosis factor alpha, are high.¹ Both of these conditions show that this tongue appearance seen in our case may be related to increased cytokines in COVID-19.

Xu et al. evaluated the density of the ACE-2 receptor used by SARS-CoV-2 to enter the cell in various tissues. According to this study, it has been shown that the ACE-2 receptor is found extensively in the tongue.¹⁵ This receptor density explains the involvement of the tongue in the involvement of SARS-CoV-2 and the lesions seen in the tongue. One of the reasons for the geographic language in our case may be due to the SARS-CoV-2 ACE-2 receptor relationship. We think that the attachment of the virus to the cells in the tongue with this receptor caused the tongue appearance in our case.

Fissured tongue and geographic tongue are asymptomatic and benign, and it has been observed that they disappear with the disappearance of the underlying cause.¹⁰ The disappearance of tongue lesions after COVID-19 treatment in our case indicates that these lesions are associated with COVID-19.

CONCLUSION

As oral lesions can be seen in COVID-19 patients, the COVID-19 picture may also present with oral lesions. Oropharyngeal examination is very important in patients

with suspected COVID-19, and clinicians must keep in mind all oral involvement, including the geographic tongue. We believe that more comprehensive studies and case series are needed to clarify the relationship between fissured geographic tongue and COVID-19.

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