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Clinical Case of Sterile Nodular Panniculitis

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Abstract

Introduction. Sterile nodular panniculitis is a rare disease of the subcutaneous adipose tissue. This condition remains insufficiently studied and requires timely and accurate diagnostic work-up. The aim of this article was to remind general practitioners and surgeons to include sterile nodular panniculitis in the differential diagnosis when presented with patients having primary multiple nodular lesions or when additional nodular foci appear during the treatment of soft tissue abscesses.

Case description. A 9-year-old intact female mixed-breed dog weighing 11.5 kg was referred from an external clinic with painful subcutaneous nodules distributed over the body, some of which had ulcerated during a 6-month observation period. The dog had been kept indoors throughout its life, with no travel outside Moscow or to other regions. Ectoparasite and endoparasite control was irregular. Previous therapy over the preceding 6 months included intermittent short courses of amoxicillin with clavulanic acid (7 days each); one week before presentation, another course of antibacterial therapy with Synulox at 12.5 mg/kg was initiated. Dermatological examination revealed multiple firm nodules ranging from 0.5 cm to 3 cm in diameter on the back and flanks; fluctuation was palpable in some nodules. Multiple fistulas with active purulent exudation were present, along with nodules measuring 0.3 to 2 cm on the abdomen and over the mammary gland region (fifth caudal package on the right and fourth on the left). Bacterial culture yielded methicillin-resistant *Staphylococcus haemolyticus*. Azithromycin at 11 mg/kg/day was prescribed. During antibiotic therapy, the nodules decreased in size but did not completely resolve. Histopathological examination confirmed locally extensive pyogranulomatous inflammation; special staining of tissue sections revealed no evidence of mycobacterial or fungal infection. Methylprednisolone at 1 mg/kg was initiated. On the second day of methylprednisolone treatment, the dog's condition improved markedly, with significant reduction in exudation, decrease in fistula diameter, and rapid regression of nodules. At the follow-up examination 10 days later, fistulous tracts were no longer present, and only two nodular lesions remained.

Discussion. The incidence of sterile panniculitis is quite rare. The diagnostic challenge is compounded by the fact that this diagnosis was not suspected at the initial presentation to the external clinic — a frequently encountered scenario. This makes the present clinical case valuable not only for dermatologists but also for general practitioners and surgeons, who should consider it in the differential diagnosis (abscess, mammary neoplasia).

Conclusion. The presented clinical case demonstrates that sterile nodular panniculitis, being a rare condition, is often masked by more common pathologies in its early stages, leading to irrational antibiotic use and the development of secondary resistant infection. The key to successful diagnosis is a comprehensive approach, including cytological and histopathological examination with exclusion of infectious agents.

Keywords: sterile nodular panniculitis, inflammation of subcutaneous fat, nodules, drug reactions, deep pyoderma, bacterial infections

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Клинический случай стерильного нодулярного панникулита

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Аннотация

Введение. Стерильный нодулярный панникулит — редкое заболевание подкожной жировой клетчатки. Данная патология остается недостаточно изученной и требует своевременной, грамотно проведенной диагностики. Целью настоящей статьи является привлечение внимания врачей общей практики и хирургов к необходимости включения стерильного нодулярного панникулита в перечень дифференциальных диагнозов при обращении пациентов с первично множественными узловыми поражениями, а также в случаях, когда дополнительные узловые очаги появляются в процессе лечения абсцессов мягких тканей.

Описание клинического случая. По направлению из сторонней клиники на прием был представлен пациент: 9-летняя интактная сука, метис, массой тела 11,5 кг, с болезненными уплотнениями на теле, часть которых за период наблюдения в течение 6 месяцев изъязвилась. На протяжении жизни собака содержалась в квартире, не вывозилась в другие регионы и за пределы Москвы. Обработки от эктопаразитов и эндопаразитов проводились нерегулярно. Предшествующая терапия за последние 6 месяцев включала амоксициллин с клавулановой кислотой, который назначали периодически короткими курсами по 7 дней. За неделю до обращения был повторно начат курс антибактериальной терапии препаратом «Синулокс» в дозе 12,5 мг/кг. При дерматологическом осмотре выявлены множественные плотные узлы различного размера — от 0,5 до 3 см в диаметре — в области спины и боков; при пальпации в некоторых образованиях определялась флюктуация. Также отмечались множественные фистулы с активной гнойной экссудацией, узлы диаметром от 0,3 до 2 см на животе и в проекции молочных желез: пятого каудального пакета справа и четвертого слева. По результатам бактериологического посева был выделен метициллинрезистентный стафилококк *Staphylococcus haemolyticus*. Назначен азитромицин в дозе 11 мг/кг в сутки. На фоне антибактериальной терапии узлы уменьшились в размере, однако полностью не регрессировали. Результат гистологического исследования подтвердил местно-распространенное пиогранулематозное воспаление; в гистологических срезах при применении специального окрашивания признаков микобактериальной или грибковой инфекции не выявлено. Был назначен метилпреднизолон в дозе 1 мг/кг. На второй день от начала приема метилпреднизолона состояние собаки улучшилось: значительно снизилась экссудация, фистулы уменьшились в диаметре, узлы стали быстро сокращаться в размере. На момент контрольного осмотра через 10 дней свищевые ходы отсутствовали, сохранялись только 2 узловых поражения.

Обсуждение. Стерильный панникулит встречается редко. Ситуация осложнялась тем, что при первичном обращении в стороннюю клинику данный диагноз не был предположен, что достаточно часто наблюдается в клинической практике. Это делает представленный случай полезным для ознакомления не только дерматологам, но также врачам общей практики и хирургам, поскольку в качестве дифференциальных диагнозов могут рассматриваться абсцесс и новообразование молочной железы.

Заключение. Представленный клинический случай демонстрирует, что стерильный нодулярный панникулит, являясь редким заболеванием, на начальных этапах нередко маскируется под более распространенные патологии, что может приводить к нерациональному применению антибактериальных препаратов и развитию вторичной резистентной инфекции. Ключевым условием успешной диагностики является комплексный подход, включающий цитологическое и гистологическое исследования с исключением инфекционной этиологии.

Ключевые слова: стерильный нодулярный панникулит, воспаление подкожной жировой клетчатки, узлы, нодулы, лекарственные реакции, глубокая пиодерма, бактериальные инфекции

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Introduction. Sterile nodular panniculitis is a rather rare pathological condition affecting subcutaneous fat. With the development of this disease, the inflammatory process is localized in adipose tissue, which provokes the destruction of adipocytes and their subsequent replacement by connective tissue elements. Lipocytes can be damaged by a wide range of factors, which leads to the release of lipids hydrolyzed to glycerol and fatty acids. It has been established those fatty acids act as powerful inflammatory agents [1]. The etiological factors of panniculitis are extremely diverse: they include bacterial or fungal infestations, autoimmune pathologies (systemic lupus erythematosus, vasculitis), drug reactions, oncological processes, pancreatitis, and vitamin E deficiency (steatitis in cats) [2]. In humane medicine, the occurrence of panniculitis on the background of pancreatitis is associated with a deficiency of α 1-antitrypsin and the decrease in the concentration of α 2-macroglobulin. Nevertheless, in the course of studies of blood serum of dogs suffering from

panniculitis, no decrease in the content of α 1-antitrypsin was found; Its values did not differ from those of healthy animals and ranged from 1.62 to 2.43 mg/dL [3].

The pathogenesis of sterile nodular panniculitis remains insufficiently studied to date. Early scientific papers suggested that this disease is a skin marker of serious functional disorders of the liver, pancreatitis, or neoplastic processes in the pancreas [4]. Later, during a retrospective analysis of 39 cases of sterile panniculitis, 82.1% of dogs did not have any systemic pathologies [5]. In clinical practice, the idiopathic form of the disease is mainly recorded, characterized by an unclear etiology.

No clear age, breed, or sexual predisposition has been established for the development of sterile nodular panniculitis. Cases of idiopathic panniculitis have been described in such breeds as: Australian Shepherds, Dalmatians, Pomeranian Spitz [6], poodles, Dachshunds, Weimaraners, Shih Tzus, Maltese, Yorkshire Terriers, Chihuahuas, Cocker Spaniels, Pekingese and others. It has been observed that female poodles and dachshunds have multiple lesions more often [7].

The diagnosis is based on the characteristic clinical manifestations, the results of cytological and histological studies (including special staining methods for the detection of fungal agents). To exclude the infectious nature of the disease, it is necessary to perform a bacteriological study (crops for aerobic and anaerobic microflora).

A certain difficulty for cytological diagnosis in sterile nodular panniculitis is the probable cellular atypia and anaplasia, which makes it difficult to differentiate the process from tumors of mesenchymal origin [8]. For this reason, the use of samples obtained by fine needle aspiration is considered by many experts as an insufficiently informative method [6]. When performing a fine needle aspiration biopsy (FNA), it is advisable to choose dense, well-bounded intact nodes. Aspiration of the contents of soft or fluctuating formations leads to the appearance of numerous inflammatory cells and adipocytes in the cytogram. In case of violation of the integrity of the capsule or the formation of a fistula, a secondary infection may occur, which is manifested by the presence of bacteria and degenerative neutrophils. Punctates from dense foci are sterile and usually contain a significant number of “foamy macrophages” (lipophages). When staining with sudan, intra- and extracellular fatty inclusions are detected, which, when using hematological dyes, look like unpainted areas. Pleomorphic fusiform or oval cells with a high nuclear-cytoplasmic ratio are often detected in the preparations. Such mesenchymal cells can cause a diagnostic error, since “pseudoanaplastic” atypia gives reason to suspect sarcoma. Signs such as the presence of inflammatory reactive changes and the presence of normal tissue elements in the punctate are indicative of the neoplastic process [9]. Cellular infiltration can be predominantly neutrophilic, lymphocytic, pyogranulomatous, or granulomatous [10].

With panniculitis caused by insect bites or medication, eosinophils may be detected. Ray-shaped crystals of fatty acids are often visualized in cytological and histological samples [2]. In the clinical analysis of the blood of dogs with multiple foci, specific abnormalities are usually not detected. 71.8% of patients had nonregenerative normocytic normochromic anemia (median hematocrit is 31%), as well as neutrophilic leukocytosis, sometimes accompanied by monocytosis and lymphopenia. During biochemical analysis, half of the animals may show a twofold increase in the activity of alkaline phosphatase, AST and ALT, as well as the increase in the concentration of alpha and beta globulins. Patients with pancreatic panniculitis often have increased amylase and lipase activity.

The final diagnosis is confirmed by histopathology, with excision node biopsy being the most informative. Since histological examination does not allow for guaranteed confirmation of the sterility of the process, infections should be excluded by cultural or cytological methods. Macroscopically, panniculitis is divided into lobular, septal, or diffuse. Given the deep location of the foci, a punch biopsy is effective only in 75% of cases [2]. Histologically, the following types are distinguished: granulomatous, pyogranulomatous, purulent eosinophilic; necrotizing; fibrosing.

Inflammation in this pathology can be accompanied by vasculitis and thrombosis of subcutaneous vessels. Direct immunofluorescence reveals deposits of Ig and complement. Thus, sterile nodular panniculitis is a diagnosis of exclusion. It is confirmed not only histologically, but also by verifying the absence of an aerobic, anaerobic, fungal or mycobacterial infection, as well as the exclusion of a reaction to a foreign body [10]. The prognosis does not depend on the specific histological type of inflammation and does not significantly affect the treatment strategy.

Materials and methods. In the described clinical case, a patient was referred from an outside clinic for an appointment: a 9-year-old intact half-breed bitch, weighing 11.5 kg, with painful seals on its body, some of which ulcerated during 6 months of follow-up.

Throughout its life, the dog was kept in an apartment and was not exported to other regions or outside of Moscow. Treatments for ectoparasites and endoparasites were carried out irregularly.

Previous therapy over the past 6 months included amoxicillin with clavulanic acid, which was prescribed periodically in short courses of 7 days. A week before admission, a course of antibiotic therapy with Sinulox at a dose of 12.5 mg/kg was re-initiated.

General examination. The body's position in space is natural. Mental status: consciousness is clear. BCS (Body Condition assessment): 7/9. The visible mucous membranes are pale pink and moderately moist. The turgor and elasticity of the skin are preserved, there are no signs of dehydration. The peripheral lymph nodes are not changed. Eyes and

appendages of the eye: the conjunctiva is pale pink, there is no discharge, the cornea is complete. Oral cavity: slight plaque is present; wounds and ulcers are absent; odor is moderate; hypersalivation is not noted. Body temperature: 38.5°C. Capillary filling rate: 1.5 s. Respiratory rate: 17 RR/min. Pulse rate: 110 beats/min.

Auscultation: the type of breathing is abdominal; vesicular breathing in all fields; pathological noises are not auscultated; tracheal reflex is negative. The heartbeat is localized, moderate in strength, rhythmic; heart tones are clear, clear, rhythmic; endocardial murmurs are not auscultated. On palpation of the abdominal cavity, the abdomen is visually symmetrical, not enlarged; the abdominal wall is soft, not tense. Multiple nodules are palpated, some of which are accompanied by fistulation and exudation, localized in the back, sides, abdomen and mammary glands.

Dermatological examination. Multiple dense nodules of various sizes were found in the back and sides, ranging from 0.5 to 3 cm in diameter; palpation revealed fluctuation in some formations. There were also multiple fistulas with active purulent exudation, nodes with a diameter of 0.3 to 2 cm on the abdomen and in the projection of the mammary glands: the fifth caudal package on the right and the fourth on the left (Fig. 1).

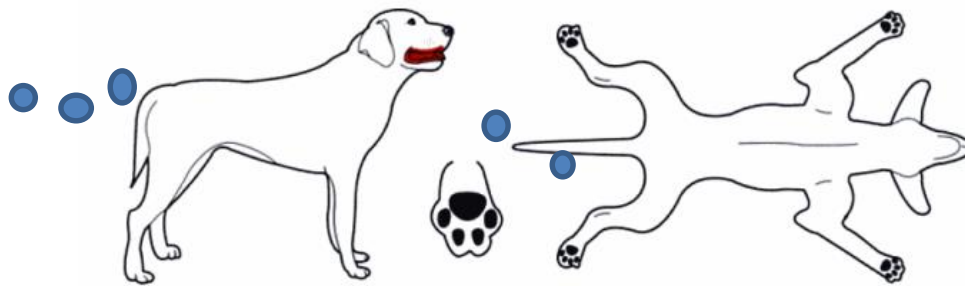


Fig. 1. Localization of lesions (nodes)

Otoscopy: the external auditory canals were visualized before the eardrums; the eardrums are intact. The walls of the external auditory canals showed no signs of stenosis, erythema, or exudation; areas of debris deposition occupying up to 10% of the area were noted on their surface. The skin of the auricles is pale pink, without visible nodules, erosions and ulcers.

As part of the initial admission, additional studies were conducted and the following results were obtained.

Cytology of the wound discharge: The material revealed an abundance of inflammatory cells with a predominance of neutrophils and macrophages. Coccoid microflora was observed in significant numbers, with signs of neutrophil cytophagy and bacterial phagocytosis.

Puncture cytology of intact nodes: The material is highly cellular, represented by inflammatory elements with a predominance of neutrophils, macrophages with phagocytosis of neutrophils and fat droplets, as well as single multinucleated cells of foreign bodies. In addition, there were accumulations of fat cells in the preparation. The background is necrotic, drops and accumulations of fat were detected. Bacteria were not reliably visualized.

Ultrasound examination of the abdominal cavity It revealed signs of chronic urocystitis, multiple microuroliths; signs of typhilitis, chronic gastropathy; chronic hepatopathy characteristic of chronic changes, including in overweight animals; moderate hepatomegaly; a small amount of suspension in the lumen of the gallbladder, which may be a variant of the norm for dogs; diffuse kidney changes characteristic of chronic/geriatric nephropathies; nephrolithiasis of the left kidney and bilateral calcification of the pelvis. At the time of the study, the reproductive system was without pathological changes.

Ultrasound examination of the lesion area: multiple focal solid avascular rounded formations ranging in size from 0.3–0.5 to 2 cm were visualized in the area of the fifth caudal sac on the right and fourth on the left of the mammary gland, in subcutaneous adipose tissue. The formations had a thick-walled hyperechoic unformed capsule; anechoic heterogeneous contents with a finely dispersed floating hyperechoic suspension were detected in their lumen. The mammary gland differentiated completely, was preserved and had no connection with these formations.

According to the results of ultrasound examination, the connection of the nodes with the mammary gland has not been confirmed, which makes the diagnosis of a breast tumor unlikely.

No initial laboratory diagnosis was performed.

Differential diagnoses: deep pyoderma (according to the results of cytological examination, a picture of pyogranulomatous inflammation was noted), sterile nodular panniculitis (the most likely diagnosis due to clinical manifestations and cytological picture), neoplasm of the mammary glands (was excluded by ultrasound examination of the mammary glands), mycobacteriosis, deep mycosis (special staining methods, culture studies, PCR can be used to exclude).

The recommended diagnostic plan included bacteriological seeding for aerobic and anaerobic microflora, cytological examination with special Ziehl-Neelsen staining to exclude mycobacterial infection, as well as seeding for fungal infections to exclude deep mycoses.

Given that the patient had already received antibacterial therapy at the time of admission, while the general condition remained stable, appetite and thirst were preserved, there were no systemic signs of inflammation, body temperature did not rise, however, a cytological examination revealed microflora, including inside phagocytes, the owners were advised to cancel the prescribed course of antibiotics and contact no earlier less than 5 days after discontinuation of therapy, to take the contents of the nodes for bacteriological examination to determine sensitivity to antibacterial drugs.

The biopsy material for histological examination was planned after a course of antibiotics prescribed based on the results of culture testing and sensitivity determination, in order to control secondary infection. This algorithm was optimal, taking into account the available information about multiple courses of antibacterial therapy in this patient in recent years [11].

The recommended treatment and diagnostic plan was partially implemented by the owners.

The patient was presented for a repeat appointment 4 weeks after the withdrawal of the antibiotic with complaints of a deterioration in general well-being, refusal to eat and apathy.

The examination revealed the following abnormalities: body temperature 39.7°C; mucous membranes pale pink; capillary filling rate 1.5 s; abdominal wall tense, painful; multiple nodules and fistulas on the body.

The following diagnostic tests were performed. According to the results of blood tests, leukocytosis, neutrophilia and anemia were noted (Fig. 2).

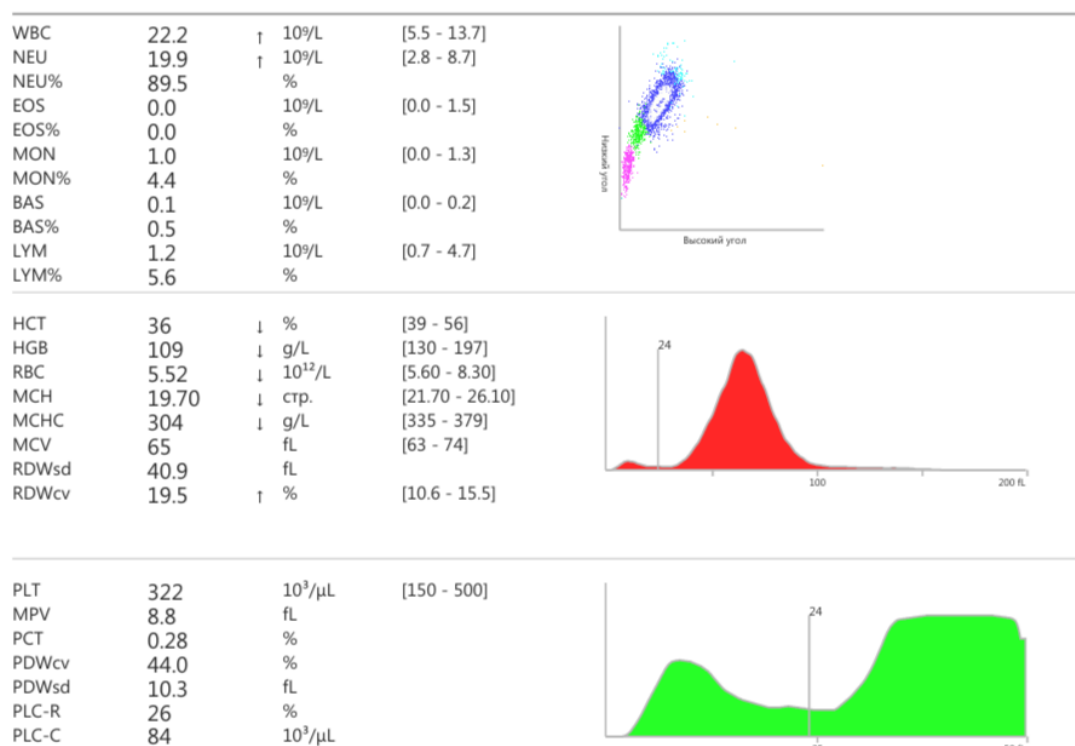


Fig. 2. The result of a general clinical blood test

A biochemical blood test showed a significant overestimation of LDH (lactate dehydrokinase), CK (creatine phosphokinase) and a slight increase in the activity of alkaline phosphatase (alkaline phosphatase) (Fig. 3).

Indicator	Unit of measurement	Result	Reference values
Albumin/globulin ratio		0,6	0,6 – 1,5
Kalium	mmol/l	4,9	4,0 – 5,7
Natrium	mmol/l	144	142 – 155
Chlorine	mmol/l	114,0	98,0 – 118,0
Cholinesterase	U/mL	6,4	2,2 – 6,5
Alanine aminotransferase	U/L	28,5	10 – 65
Albumin	g/l	29,0	25,0 – 37,0
Alpha-amylase	U/L	1692	300 – 1 500
Aspartate aminotransferase	U/L	72,2	10 – 50
Total protein	g/l	79,00	0 – 6 month 34 – 52; 6 – 12 month 49 – 67; older than a year 54 – 77
Total bilirubin	mcmmol/L	1,5	< 10,0
Direct bilirubin	mcmmol/L	1,0	< 5,0
GGT	U/L	5	< 6
Glucose	mmol/l	2,7	4,3 – 6,6
Ionized calcium	mmol/l	1,30	1,26 – 1,50
Common calcium	mmol/l	2,55	2,25 – 2,7
Creatinine	mcmmol/L	75,0	34,0 – 124,0
common CK	U/L	1051	59 – 495
LDH	U/L	2259	20 – 350
Total lipase	U/L	220,1	13 – 300
Magnesium	mmol/l	0,77	0,8 – 1,2
Uric acid	mcmmol/L	11	0 – 100
Urea	mmol/l	4,9	3 – 9
Triglycerides	mmol/l	1,2	0,22 - 1,25
Phosphorus inorganic	mmol/l	1,45	0,90 – 2,50
Cholesterol	mmol/l	6,5	2,9 – 7,5
Alkaline phosphatase	U/L	273	for adult dogs 10 – 70 puppies до 8 month 80 – 230
Globulins	g/l	50	24 – 40
de Ritis ratio coefficient		2,5	< 1,3
Ferrum	mcmmol/L	7,7	20 – 30

Fig. 3. The result of a biochemical blood test

Based on the data obtained, signs of systemic infection were identified and a list of differential diagnoses was formed: deep pyoderma/multiple soft tissue abscesses; sterile nodular panniculitis; breast neoplasm complicated by secondary infection; mycobacteriosis; deep mycosis.

On the day of treatment, the material was taken by excision biopsy: the node was completely excised, with skin and subcutaneous tissue entrapped, followed by closure of the defect with cutaneous nodular sutures (Fig. 4). Bacteriological seeding of the wound discharge and seeding of the material from the intact node for anaerobic microflora were also performed.



Fig. 4. The patient after taking a biopsy

The biopsies were sent to the “Artvet” laboratory for histological examination, as well as additional PAS and Ziehl–Neelsen staining in order to exclude mycobacteriosis and deep mycoses.

Due to the deterioration of the patient's condition, the presence of signs of systemic infection and potential antibiotic resistance to amoxicillin with clavulanic acid, it was decided to prescribe a systemic antibacterial drug from the group of fluoroquinolones, enrofloxacin at a dose of 7 mg/kg per day, pending the results of the studies. A follow-up inspection was scheduled in 14 days; at the same time, feedback from the owners was maintained through regular phone calls. During therapy before the follow-up visit, the patient's condition improved: appetite and thirst were restored, and the dog became more active. The condition of the skin lesions changed slightly, and there was a slight decrease in exudation.

According to the results of bacteriological culture, methicillin-resistant staphylococcus *Staphylococcus haemolyticus* was isolated (Table 1).

Table 1

The result of bacteriological seeding

The results of Bacteriological seeding with sensitivity <i>Staphylococcus haemolyticus</i> 10 ² CFU /tamp	
Amoxicillin/Clavulanate	R
Linezolid	S
Tobramycin	S
Chloramphenicol	R
Piperacillin	R
Ticarcillin	R
Ampicillin	R
Gentamicin	S
Ciprofloxacin	I
Tetracycline	S
Lincomycin	R
Vancomycin	S
Erythromycin	S
Ampicillin/sulbactam	R
Oxacillin	R
Sulfomethoxazole/trimethoprim	S
Enrofloxacin	I

Doxycycline	S
Clindamycin	S
Azithromycin	S
Norfloxacin	I
Fusidine	S
Rifampicin	S
Benzylpenicillin	R
S (susceptible) sensitive. I (intermediate) medium sensitive. R (resistant) steady.	

Based on the results of the bacteriological study, it was decided to replace the antibacterial drug with azithromycin at a dosage of 11 mg/kg per day. The choice of this drug was determined by the revealed intermediate sensitivity of the microflora to enrofloxacin, as well as the available data that azithromycin has pronounced immunomodulatory properties, contributing to the shift of the inflammatory response (mainly in macrophages) towards the functional aspects of tissue regulation and repair [12].

Additionally, the patient was prescribed local therapy: bathing using shampoo with benzoyl peroxide (Goodman "Cleansing") 2 times a week with an exposure of 15 minutes, as well as treating the affected areas with 2% chlorhexidine solution 1 time a day. A follow-up examination was carried out 10 days later. According to the information provided by the owners, the animal's condition stabilized 4-5 days after the start of taking azithromycin: the dog became more active, and the volume of nodes decreased by more than 2 times.

By the time the results of the histological examination were ready, the patient had been receiving azithromycin therapy for 3 weeks. At the same time, if there was a pronounced positive trend in the first week of admission, then in the next 2 weeks the pathological process entered the stagnation stage. Histological data confirmed the presence of locally widespread pyogranulomatous inflammation. No signs of mycobacterial or fungal infections were found in histosections using special staining methods. Despite the fact that the histological conclusion did not allow to completely exclude all possible etiological factors of an infectious nature, the owner refused to conduct further additional studies.

Based on the above, as well as taking into account the weak positive dynamics against the background of antibacterial therapy, after assessing all possible risks and informing the owner about them, methylprednisolone in an immunosuppressive dose was added to the treatment. The recommended dosage of glucocorticosteroids for the treatment of sterile nodular panniculitis, in particular prednisone, is 1-2 mg/kg per day [2]. Methylprednisolone was chosen due to its lower mineralocorticoid activity and, consequently, lower likelihood of side effects such as polydipsia and polyuria. The starting daily dose of methylprednisolone for this dog was 8 mg per day, based on the data that 5 mg of prednisone is equivalent to 4 mg of methylprednisolone.

On the second day after the start of taking methylprednisolone, the patient's condition improved: exudation decreased significantly, the diameter of the fistulae decreased, and nodular formations began to regress rapidly. At the time of the follow-up examination after 10 days, there were no fistulous passages; only 2 nodular lesions remained: one in the back area on the right and one on the left side. The material was obtained from the nodes for cytological examination; no microflora was detected in the test sample. In this regard, it was decided to discontinue antibacterial therapy.

Based on the pronounced positive dynamics observed against the background of immunosuppressive treatment, it can be concluded that this clinical case corresponded to sterile nodular panniculitis.

After 3 weeks from the start of taking methylprednisolone, positive dynamics persisted: a single node was detected in the caudal right region of the back, without signs of fistula and fluctuation. It was recommended to start reducing the dose of methylprednisolone to 4 mg every second day. In order to prevent delayed side effects of glucocorticosteroids, cyclosporine was included in the treatment regimen at a dose of 7 mg/kg per day daily.

After 2 weeks of therapy according to the scheme: cyclosporine 7 mg / kg daily, methylprednisolone 8 mg on the first day and 4 mg on the second day, a new lesion appeared in the back area. After returning to the initial regimen of methylprednisolone — 8 mg per dog daily — the new nodular lesion in the back area began to decrease in size; no new pathological foci were noted further.

After 2 more weeks, against the background of persistent remission, the dose of methylprednisolone was reduced to 6 mg on the first day and 2 mg on the second day, and one week after, the patient was switched to taking methylprednisolone 4 mg every other day, since the regimen of glucocorticosteroids every other day in dogs is considered safer, especially if long-term therapy. However, such schemes do not exclude the development of adrenal atrophy, although its severity should be lower than with more frequent use of the drug in high doses.

At the time of writing, the patient's follow-up period is 3 months. The dog receives methylprednisolone at a dose of 4 mg every other day and cyclosporine at a dose of 7 mg / kg daily. There were no side effects, the patient's condition was stable, the skin and coat were clean, without any features (Fig. 5).



Fig. 5. A patient in remission

Discussion. Based on the observation of the patient for 3 months, the absence of relapses after discontinuation of antibacterial therapy and a good response to the prescribed treatment, it was concluded that this clinical case corresponded to sterile nodular panniculitis. The disease was probably complicated by a secondary infection caused by methicillin-resistant staphylococcus, which could be due to primarily irrational antibacterial therapy. Due to the use of an antibacterial drug, to which the sensitivity of the isolated microorganism was confirmed, the infectious process was successfully resolved and did not recur during the entire observation period; repeated bacteriological crops were not necessary.

Cyclosporine was prescribed to this patient due to the fact that sterile nodular panniculitis requires long-term, and in some cases, lifelong immunosuppressive therapy. In addition, the drug was included in the treatment regimen to reduce the risk of delayed side effects associated with the use of glucocorticoids, as well as to reduce their dose or completely transfer the patient to cyclosporine therapy.

Conclusion. Sterile nodular panniculitis, especially in the initial stages, is easily mistaken for more common diseases, such as pyoderma, ligature fistulas or abscesses. In the described clinical case, only pyoderma was treated at the initial stage. At the same time, the antibacterial drugs previously prescribed to this patient were used in therapeutic doses, but in short courses, which could contribute to the formation of methicillin resistance.

When making a diagnosis, it is necessary first of all to exclude the infectious causes of panniculitis using cytological examination, bacteriological seeding and seeding for anaerobic microflora. An overview ultrasound of the abdominal cavity, a general clinical blood test and a biochemical blood test should also be performed to exclude pathologies that can cause panniculitis, including oncological processes, pancreatitis and other diseases. The final diagnosis is established on the basis of histopathological examination. The biopsy is obtained by excision biopsy, in which the node is completely excised. Unfortunately, in this case, the full scope of the research was not carried out for financial reasons. Given that the administration of immunosuppressive drugs without completely eliminating infectious causes can lead to serious consequences, the owners were informed of all possible risks. The decision to start immunosuppressive therapy was made by them on the basis of full awareness.

Sterile panniculitis is quite rare. The situation was complicated by the fact that this diagnosis was not assumed at the initial visit to a third-party clinic, which is a fairly common situation [2]. This makes the presented clinical case useful for acquaintance not only by dermatologists, but also by general practitioners and surgeons, including during differential diagnosis with abscess and neoplasm of the breast.

This case may be useful for general practitioners and surgeons to include sterile nodular panniculitis in the list of differential diagnoses when treating patients with primary multiple nodular lesions, as well as in situations where additional nodular foci appear during the treatment of soft tissue abscesses.

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