

## INVASIVE AND DESTRUCTIVE TRANSMISSIBLE VENEREAL TUMOR IN THE NASAL CAVITY OF A DOG – A CASE REPORT

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**ABSTRACT:** A three-years old, male mongrel dog weighting 12 kg was admitted to the Veterinary Teaching Hospital of the Universidade Paranaense (UNIPAR) in Umuarama, State of Paraná, Brazil, with swelling and softening of the upper nasal area, emaciation, prostration, halitosis, sneezing and bloody nasal discharge. The dog had a soft subcutaneous mass on the maxilla extending from the *planum nasale* to over the frontal sinuses, more severe on the right side. The osseous structures of the maxilla were partially absent. The posterior third of the hard palate was ulcerated exposing the nasal cavity. The right incisors, canine, and premolars 1, 2 and 3 teeth had lost their bony sustentation and were freely movable. The right premolar 4 was abnormally mobile. The dog was euthanized and necropsied. The nasal passages were filled with a whitish hemorrhagic friable mass and the following bones were totally or partially destroyed: frontal, right nasal, right turbinates, right incisive, alveolar border of the maxillary and the horizontal part of palatine, including the dental alveoli of the right incisive, canine and first three premolar teeth. Metastases were not found anywhere. Cytological and histopathological examination revealed uniform population of round cells in compact sheets, often arranged in packets as defined by delicate conjunctive and vascular stroma. The cells had large hyperchromatic nuclei, evident nucleoli and coarse chromatin. Their cytoplasm was abundant, slightly basophilic and distinctively vacuolated. Mitotic index reached up to 7 mitotic figures per high power field. Foci of lymphocytes were occasionally found among the neoplastic cells. The final diagnosis was Transmissible Venereal Tumor, primary to the nasal cavity.

**KEY WORDS:** transmissible venereal tumor, nasal cavity, dog

## TUMOR VENÉREO TRANSMISSÍVEL INVASIVO E DESTRUTIVO LOCALIZADO NA CAVIDADE NASAL DE UM CÃO RELATO DE CASO

PACHALY, J.R.; WERNER, P.R.; CIFFONI, E.M.G.; DANTAS, J.C.; WERNER, J.; TANAKA, N.M. Tumor venéreo transmissível invasivo e destrutivo localizado na cavidade nasal de um cão – Relato de Caso. *Arq. ciên. vet. zool. UNIPAR*, 2(1): p. 77-81, jan./jul., 1999.

**RESUMO:** Um cão macho com três anos de idade e peso de 12 kg foi admitido na Clínica de Pequenos Animais da Universidade Paranaense – UNIPAR, em Umuarama, PR. O paciente apresentava aumento

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de volume na região nasal, emaciação, prostração, halitose, espirros freqüentes e corrimento nasal hemorrágico. O exame físico evidenciou uma massa palpável subcutânea na maxila, estendendo-se do plano nasal até sobre os seios frontais, mais severa à direita. A massa era macia e apenas as bordas das estruturas ósseas subjacentes eram palpáveis. Os dentes incisivos, canino e pré-molares 1, 2 e 3 superiores direitos haviam perdido a sustentação e eram completamente móveis. O dente pré-molar 4 exibia mobilidade anormal. O terço posterior do palato duro estava ulcerado, expondo a cavidade nasal. O cão foi morto e necropsiado. A cavidade nasal estava preenchida por massa neoplásica esbranquiçada, friável e hemorrágica. Os ossos frontal, turbinados direitos, nasal direito, incisivo direito, bordo alveolar do maxilar, incluindo os alvéolos dentários, e a porção horizontal do osso palatino estavam parcial ou completamente destruídos. Outros tumores ou metástases não foram encontrados em nenhum outro órgão. Exames citológicos e histopatológicos revelaram população uniforme de células redondas com aspecto linfóide dispostas de forma compacta ou formando grupos separados por delicado estroma conjuntivo vascular. Seus núcleos eram grandes, hipercromáticos, com nucléolos evidentes e cromatina grosseira e o citoplasma era abundante, discretamente basofílico e vacuolar. Mitoses eram freqüentes, atingindo até 7 por campo de 400 X. Focos de linfócitos eram observados ocasionalmente. O diagnóstico final foi de Tumor Venéreo Transmissível primário na cavidade nasal.

**PALAVRAS-CHAVE:** tumor venéreo transmissível, cavidade nasal, cão

## TUMOR VENÉREO TRASMISSIBLE INVASIVO Y DESTRUCTIVO EN LA CAVIDAD NASAL DE UN PERRO – CASO CLÍNICO

PACHALY, J.R.; WERNER, P.R.; CIFFONI, E.M.G.; DANTAS, J.C.; WERNER, J.; TANAKA, N.M.

Tumor venéreo trasmisible invasivo y destructivo en la cavidad nasal de un perro – Caso clínico. *Arq. ciên. vet. zool. UNIPAR*, 2(1): p. 77-81, jan./jul., 1999.

**RESUMEN:** Un perro macho de tres años de edad y peso de 12 kg fué atendido en la Clínica de Animales Pequeños del Hospital Veterinario de la Universidad Paranaense (UNIPAR), con queja principal de hinchazón y ablandamiento de la área nasal superior. El problema había empezado hace un año y agravado en los últimos dos meses. Los signos clínicos más importantes eran adelgazamiento, postración, halitosis severa y descarga nasal sangrienta. El perro tenía una masa hipodérmica blanda en el maxilar, se extendiendo del *plannum nasale* a encima de los senos frontales, más grande en el lado derecho. La estructura ósea del maxilar estaba parcialmente ausente. El tercio posterior del paladar duro estaba ulcerado y expuso la cavidad nasal. Los dientes derechos incisivos, canino y premolares 1, 2 y 3 habían perdido su sustentación ósea tornandose libremente movibles. El premolar 4 derecho era anormalmente móvil. Se practicó eutanásia y necropsia. Los pasajes nasales estaban llenos con una masa blanquecina sangrienta friable y toda la estructura ósea dentro de la cavidad nasal estaba destruída. Los huesos siguientes fueran totalmente o parcialmente destruídos: frontal, turbinados derechos, nasal derecho, borde alveolar del maxilar y parte horizontal del palatino, incluso los alveolos dentales de los dientes incisivos, canino y primeros tres dientes premolares derechos. No se encontraron metástases en cualquier parte. Los exámenes citológico y histopatológico revelaron población uniforme de células redondas en hojas compactas, o formando grupos separados por tejido conjuntivo vascular delicado. Las células tenían núcleos hipercromáticos grandes, nucléolos evidentes y cromatina tosca. El citoplasma era abundante, ligeramente basofílico y vacuolado. El índice de mitosis alcanzó 7 figuras mitóticas por campo de 400 X. Focos de linfócitos se encontraran de vez en cuando entre las células tumorales. El diagnóstico final fué Tumor Venéreo Trasmisible primário en la cavidad nasal.

**PALABRAS-CLAVE:** tumor venéreo trasmisible, cavidad nasal, perro.

### Introduction

The transmissible venereal tumor (TVT) is a relatively common neoplasia of dogs, usually affecting

the mucosa of the penis or vagina. The tumor is considered a naturally occurring allograft, transmitted by transplantation of viable cells from dog to dog. The origin of the cell is not even suspected since tumor



cells contain 59 chromosomes, as compared with the normal canine of 78 (SCOTT, MILLER & GRIFFIN, 1995). The neoplasm is usually transmitted during coitus but may be inoculated into multiple sites by licking, biting, and scratching. Experimentally it was demonstrated that it can be transmitted by subcutaneous, intravenous, or intraperitoneal injections and by skin or mucosal scarification. The neoplasm becomes clinically apparent approximately 3 weeks after implantation (SCOTT, MILLER & GRIFFIN, 1995).

The tumor occurs in sexually active dogs, especially those young and unconfined, and shows no breed predilection, affecting both sexes equally (SCOTT, MILLER & GRIFFIN, 1995). It rarely invades other organs but animals with poor health or immunosuppressed for various reasons may be more likely to have more aggressive or metastatic lesions. Occasionally neoplasms occur in the skin, especially in the face and limbs. Less frequently the oral cavity (NIELSEN & KENNEDY, 1990; KENNEDY & MILLER, 1993; SCOTT, MILLER & GRIFFIN, 1995) and nasal passages are affected. According to NIELSEN & KENNEDY (1990) the frequency of extra-genital affection is 5%. The tumor may be single or multiple, nodular, pedunculated, multilobular or cauliflower-like, firm or friable, and up to 20 cm in diameter (SCOTT, MILLER & GRIFFIN, 1995).

Clinical signs of TVT are hemorrhagic discharge from the penis and vulva. Occasionally a visible mass is seen protruding from the prepuce or vulva which prompts the owner to seek medical advice. When affecting the nasal cavity, owners report slightly bloody nasal discharge of foul odor and occasionally facial deformity (ROGERS, WALKER & DILLON, 1998).

Histologically, TVT is characterized by compact masses or sheets of uniform round to polyhedral cells, growing in rows or in small groups separated by a delicate vascular stroma. Mitoses are plentiful. Tumors undergoing spontaneous regression display increasing areas of necrosis, foci of mononuclear leukocytes, specially lymphocytes, and increasing numbers of collagen bundles (SCOTT, MILLER & GRIFFIN, 1995). The cells are easily exfoliated and show characteristic features which make cytological diagnosis easy and accurate.

Transmissible venereal tumors have a worldwide distribution but are most prevalent in

tropical and subtropical areas (SCOTT, MILLER & GRIFFIN, 1995; ROGERS, WALKER & DILLON, 1998). For still unknown reasons, the northeast region of the State of Paraná, Brazil, shows an apparently higher than expected prevalence when compared to the remainder of the State.

This paper reports a case of TVT affecting primarily the nasal passages of a dog. Nasal involvement is by no means uncommon, reaching almost 7.0 % in a recent study (ROGERS, WALKER & DILLON, 1998). What makes the present case unusual is the severe bone destruction of the maxilla leading to teeth loss, an observation so far unreported.

### Material And Methods

A three-years old, male mongrel dog weighting 12 kg was admitted to the Small Animal Clinic at the Veterinary Teaching Hospital of the Universidade Paranaense (UNIPAR) in Umuarama, northeastern region of the State of Paraná, Brazil. The chief complaint was weight loss, nasal discharge and swelling of the upper nasal area (Figure 1) which had begun one year ago and aggravated in the last two months. Major clinical signs were emaciation, prostration, halitosis, sneezing and bloody nasal discharge. Physical examination revealed a soft subcutaneous mass on the maxilla extending from the *plannum nasale* to over the frontal sinuses, more severe on the right side. The osseous structures of the maxilla were partially absent on palpation. The posterior third of the hard palate was ulcerated exposing the nasal cavity. The upper right canine, and premolars 1, 2 and 3 teeth had lost their bony sustentation and were freely movable (Figures 2 and 3). The upper right incisors and premolar 4 were abnormally mobile. Cytological examination of the nasal discharge was performed. At owner's request, the dog was euthanized and necropsied at the Service of Animal Pathology of the UNIPAR. During necropsy touch imprints were made and tissue samples were taken for cytological and histopathological examinations.

### Results

The nasal passages were obliterated with a whitish hemorrhagic friable mass (Figure 4). The right nasal, right turbinates, right incisive, alveolar



border of the maxillary and horizontal part of palatine bones were destroyed, including the dental alveoli of the right incisor, canine and premolar teeth. Both caudal nasal passages and both frontal sinuses were completely obliterated by thick purulent mucus which would not flow freely. The external bony wall of the frontal sinuses were destroyed as well. Metastases were not found anywhere. Cytological and histopathological examination of the tumor samples revealed a uniform population of round cells in compact sheets, often arranged in packets as defined by delicate conjunctive and vascular stroma. The cells had large hyperchromatic nuclei, evident nucleoli and coarse chromatin. Their cytoplasm was abundant, slightly basophilic and distinctively vacuolated. Mitotic index reached up to 7 mitotic figures per high power field. Foci of lymphocytes were occasionally seen amongst the neoplastic cells. The tumor was diagnosed as invasive and destructive transmissible venereal tumor, primary to the nasal cavity.

### Discussion

It is well known that TVT have a worldwide distribution, being most prevalent in tropical and subtropical areas. In the northern hemisphere it is considered an uncommon neoplasia (SCOTT; MILLER & GRIFFIN, 1995). In spite of lack of data on the prevalence of TVT on the State of Paraná, it is apparent that here cases with extragenital involvement does not occur in the same proportion reported for the northern hemisphere. ROGERS; WALKER and DILLON (1998) reported rates of up to 20.6% of the cases of TVT with involvement of organs other than the genitals, with almost 7.0% of the total showing lesions in the nasal cavity. Those data defy the common knowledge of Brazilian veterinarians, since only rarely one sees

cutaneous or nasal involvement by TVT. For still unknown reasons, the northeast region of the State of Paraná, Brazil, shows an apparently higher than expected prevalence. An study is currently being undertaken by some of the authors to define the prevalence rates of TVT in this of the State of Paraná.

Accordingly to published data, nasal location of TVT is by no means uncommon. However, there are no reports on the literature of such a location with the aggressive behavior observed here. It becomes more interesting if one considers the degree of alveolar bone involvement by the tumor, one so far unreported cause for teeth loss in dogs. The reasons or mechanisms for bone lysis can only be speculated upon, since it is not reported that TVT cell can invade and erode bone. It is possible, but much unlike, that bone lysis was due to inflammation alone.

Medical treatment for TVT is well established and usually successful (ROGERS, WALKER & DILLON, 1998) but was not attempted here. At owners request the dog was euthanized after an unfavorable prognosis was presented to him. Anyway, it is doubtful if the patient would ever succeed due to the severity of the lesions.

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**Figure 1.** Left side of the face of a dog with extragenital Transmissible Venereal Tumor (TVT) affecting the nasal passages and facial sinuses. It is possible to observe the enlargement of the right side of the face.

**Figure 2.** Extragenital TVT in a dog. The tumor has eroded the right nasal bone, alveolar border of the right incisive bone and horizontal part of the palatine bones, compromising the sustentation of the upper right incisive, canine and first three premolar teeth.



**Figure 3.** Extragenital TVT in a dog. Another view of the oral lesions compromising the sustentation of the upper right incisive, canine and first three premolar teeth.

**Figure 4.** Extragenital TVT in a dog. At necropsy, the nasal passages were filled with a whitish hemorrhagic friable mass which eroded the regional bones and invaded the frontal sinuses and oral cavity.

