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A RETROSPECTIVE STUDY ON CUTANEOUS AND SUBCUTANEOUS NEOPLASMS IN EQUINE

(With One Table and 11 Figures)

By

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دراسات على الأورام الجلدية والتحت جلدية فى الفصيلة الخيليه

حسين المغربى

خلال فترة ثلاث سنوات تقريبا تم تسجيل ٣٧ حاله أورام جلدية وتحت جلدية فى الفصيلة الخيليه. وتم كذلك تحديد النوع والسن والجنس. وتم كذلك تحديد أماكن هذه الأورام وطرق استئصالها جراحيا وكذلك النتائج بعد اجراء الجراحة لها. وتم تصنيف هذه الأورام ونسبتها المئويه كالآتى:- شبيهة الأورام اللحميه ١ر٣٥٪، الأورام الميلانينيه ٢٧٪، الأورام الليفيه ٩ر١٨٪، الأورام الحليميه ١ر٨٪، الأورام الليفيه اللحميه ٤ر٥٪ والسرطانات ٤ر٥٪. وكانت الأورام الجلديه الحميده اكثر نسبة عن الأورام الخبيثه حيث بلغت ٥و٨٦٪ بينما الأخرى بلغت ٥ر١٣٪.

SUMMARY

Thirty seven cutaneous and subcutaneous equine neoplasms had been recorded during about three years period. The breed, age and sex of subjects with these masse were recorded. The sites of these tumoure as well as the surgical management and the outcome of the surgery were all recorded and studied. The encountered neoplasms were sarcoid (35.1%), melanoma (27%), fibroma (18.9%), papilloma (8.1%), fibrosarcoma (5.4%) and squamous cell carcinoma (5.4%). Benign cutaneous neoplasms (86.5%) were more prevalent than malignant ones (13.5%).

Key words: *Equine-Subcutaneous-Neoplasms.*

INTRODUCTION

Neoplasms have a wide particular biological interest and considered to have a life threatening importance, in many cases, in human beings and animals.

Neoplasms of the skin and subcutaneous tissue are the most frequently recognized neoplasm in domestic animals (Theilen and Madewell 1987). Cutaneous tumors comprise 45% to 67% of tumors occuring in horses (Baker & Leyland, 1975). Sarcoids, fibroma, fibro-myxoma, melanoma and squamous cell carcinoma are among the most frequent recorded ones in equine (John and Hunt 1983, Atallah et al 1984, Sadi et al 1984, Pully and Stannard 1990). Meanwhile, cutaneous fibrosarcoma are relatively uncommon in equines (Priester 1973). Skin overlying the cutaneous masses may be alopecic, ulcerated, pigmented or even normal (Shappel and Little 1992). Early diagnosis may be important for the prognosis of the animal to avoid metastasis (Jean et al 1994).

The aim of this study is to present the most commonly encountered neoplasms of the skin and subcutaneous tissue in horses, mules and donkeys as well as their prevalence sites and surgical management and to compare the results with other reported data.

MATERIALS and METHODS

A total number of 37 equine cutaneous and subcutaneous neoplasms had been recorded in the period between Oct., 1992 to Sep., in the clinic of veterinary surgery at Moshtohor, Egypt.

The animals were premedicated with Combelen** in a dose rate of 0.2 mg/kg. b.w. intramuscularly. Then excision of the masses was performed under the effect of chloral hydrate narcosis in a rate of 10 g/ 100 kg b.w. 10% solution injected intravenously together with local infiltration of 2% lignocaine Hcl solution. Haemorrhage with electrocautery, pressure and /or ligation. Follow up of these cases was carried out for a period ranged between 2-12 months.

Specimens from the neoplasms were fixed in 10% formalin solution. Five micron thick paraffin sections were prepared, stained with haematoxylin & eosin and examined microscopically.

RESULTS

The prevelance of the recorded neoplasms is given by breed and sex (Table 1). Benign neoplasms of the skin and subcutaneous tissue were recorded in 32 cases which represented 86.5% of the examined cases (13 sarcoid, 9 melanoma, 7 fibroma and 3 papilloma). Meanwhile malignant ones were recorded in only 5 animals (13.5%); theses cases were 2 squamous cell carcinomas, 2 fibrosarcomas and one amelanotic melanosarcoma.

Equine papilloma had been recorded in three horses. In one case the masses were occupying the inner surfaces of the pinnae of a stallion (two years old). Pale whitish, rough, cauliflour-like masses were filling (either totally or partially) both of the external conchae of the ear (Fig 1). Finger like projections (2-5 cm in length) were extending over a scaly inner skin of the pinna. Fourtunatly, these masses were not extending through the ear canal, so excision of the masses were performed quite enough along it's base. Injury of the auricular cartilage was avoided. Histopathological examination revealed long papillary projections made up of typical epidermal tissue on both sides with delicate vascular connective tissue core and very thick outermost keratinized layer. Follow up for two months postoperatively showed no recurrence and both conchae healed completely with good cosmotic results. In another two horses (one and two years old) small, sessile, circumscribed fleshy lesions were detected around nose and lips. These lesions were in small clusters measuring about 2-4 cm in diameter. These lesions disappeared spontaneously after 6-8 weeks without surgical interference.

Melanomas were detected in 10 animals (7 horses, 2 mules and a donkey). These masses were distributed anatomically on hind limbs (3), neck (2), shoulder region (2) periocular region (2) and perineal region (1). These cases showed the presence of sessile, dark brown to black hyperpigmented masses (Fig 2). The size of these masses was variable from peanut to a child head like mass (22 cm x 11 cm x 6 cm). The surfaces of these masses were uneven and ulcerated in only three cases while skin covering theses mases seemed normal in 7 cases (Fig 3). The cut surfaces of the excised masses were dark brown in all cases but one mass showed also greyish-white foci 2-5 mm in diameter. Surgical excision was curative in most of these cases (9 animals), but in one case there was recurrence and metastasis to the shoulder region 10 months post-operatively was observed. Histopathological examination revealed the picture of melanoma in all masses but one case revealed in addition to melanoma, the picture of amelanotic melanosarcoma which was

characterized by presence of aggregated masses consisted mainly from melanoblasts deprived from melanine pigments. The neoplastic cells were embedded in the fibrous tissue. The nuclei showed poelomorphism and vascularity. The neoplasm showed also lobulation.

Fibromas (Figs 4,5&6) had been diagnosed in 7 animals (3 horses, 4 donkeys). Most of these cases were firm (4 cases) while only one case was soft. All cases were solitary and well circumscribed. The anatomical distribution of these cases were limbs (4), neck (2) and abdomen (1). They were either pedunculated (5 cases) or sessile (2 cases).

Fibrosarcoma was diagnosed in 2 animals (one horse & one donkey). They were distributed in the back (Fig 7) and the neck. Skin overlying these masses was intact in both cases. Grossly, fibrosarcomas were firm, fleshy lobulated masses with interposed soft friable areas. On cut section, a highly vascular tissue with reddish brown coloration was seen.

Sarcoids (Figs 8, 9, 10 & 11) were recorded in 13 animals. The anatomical distribution of these masses was located on limbs (8), face (3), neck (1), and abdomen (1). They appeared as firm, discrete masses elevated above the skin. it was solitary in 10 cases, while it was multiple in 3 cases. It was sessile in 11 cases but was pedunculated in 2 animals. The surface of these masses was ulcerated and covered with necrotic tissues in all cases. It was associated with complications as arthritis (3 cases). Surgical excision was curative in most of these cases (10) while recurrence was detected in 3 cases which necessitated re-excision and complicated with large skin defect.

Squamous cell carcinoma was recorded in two cases. It involved the nictitating membrane and the lower eyelid in a stallion and vulva of a she donkey. Both masses were sessile and ulcerated. Metastasis to the supramammary lymph node was detected in the second case. Follow up of the first case for 5 months after extirpation of the eyeball showed no recurrence while it could not be continued for the second case. Histopathological examination revealed presence of islands of neoplastic epithelial cells with variable degree of differentiation but keratin nests were present. The cells were implanted in a fibroplastic connective tissue stroma.

DISCUSSION

Morphological and epizootic studies of the neoplasms provide information that can help in the diagnosis and prognosis of other cases in the future.

Papillomas are frequently recognized tumors of horses generally located on the lips, nose and legs (sundberg et al, 1977 & Theilen & Madewell

1987). In one study, it represented the third most common neoplasm in equines (Sundberg et al, 1977). A clinically distinct variety of papillomatosis in horses is the so called equine aural plague, where large coalesecent hyperkeratotic plagues could detected (Scott, 1988).

The reported cases of papillomas in this study were mostly affecting young horses (not more than two years old). These results might be in agreement with others who stated that papilloma occurs in horses younger than three years old and even may be congenital (Scott., 1988 and Radostits et al , 1994). Aural plaque was recorded in this study bilaterally and was progressing by time; this result agree others (scott, 1988). While spontaneous recovery was recorded in two horses within two months, surgical interference was essential in the other case with aural plaque. Spontaneous recovery of equine papilloma is usually suspected (Radostits et al, 1994). Meanwhile, aural plaques don't regress spontaneously (Scott, 1988). Surgical excision of the aural masses bilaterally was successful and recovery was uneventual with good cosmotic results.

Melanoma is one of the most common tumours in most of the domestic animals, actively malignant melanomas are specially frequent in grey horses (John and Hunt 1983). In this study, melanoma was more diagnosed in males and older animals. These results agree with other previous reports which stated that risk of melanoma increases in horses over than 6-10 years old (Sundberg et al. 1977; John and HUnt 1983). The anatomic distribution of melanomas was limbs, neck, shoulder, periocular area and vulva. The skin over subcutaneous melanoma was either mobile and non ulcerated or ulcerated and uneven. This result might agree with Cotchin, (1960) who stated that skin covering dermal or subcutaneous Imelanoma may remain mobile for some time. It is interesting to mention that one horse showed amelanotic melanosarcoma at the neck which later metastatized to the shoulder region. Most melanoma have a completely begnign course while malignant melanoma can metastatize via lymph channels and blood (Pulley and Stannard, 1990).

Fibromas and fibrosarcomas arise from the dermal or subcutaneous fibroblasts, while fibromas are benign; fibrosarcoma are locally invasive with metastasis occurring in 25% of the reported cases (Scott, 1988). Fibrosarcoma arising in the skin & underlining tissue are rarely recognized in horses; in one study, it represented 0.4% of tumours of horses (Priester, 1973). In this study fibromas represent 18.9% while fibrosarcomas represent 5.4% of the encountered cases. The high incidence of fibromas might agree with other reports (Abd El-Maboud et al 1994). Despite metastasis of

fibrosarcoma to spinal cord had been reported previously in a stallion (Reinerston, 1974), in this study a donkey with large fibrosarcoma on its back showed local invasion without clinical evidence of metastasis. However, metastasis might be expected to occur over the long term. This agree with other reports which stated that fibrosarcoma usually tend to be slow to metastatize and are deeply invasive (Oehme, 1988; El-Maghraby and Fahmy, 1995).

Equine sarcoid is unique, local aggressive and fibroplastic skin tumours (Scott, 1988). The gross appearance of sarcoid are greatly similar to fibromas so it must be differentiated histpathologically (Baker and Leyland, 1975). Sarcoid was the most frequently observed tumour along this study; it represented 35.1% of the encountered cases. This is in agreement with some other reports in horses (Strafuss et al. 1973, Sadi et al1984, Theilin and Madewell 1987 & Scott, 1988). Sarcoid was seen in both sexes of horses, mules and donkeys. No breed or age or sex predilection (Ragland et al 1970, Theilen and Madewell 1987, Pulley and stannard 1990). About one third of the reported cases had multiple sarcoid and most of the affected animals were donkeys. The most affected region was the limbs. The incidence of sarcoid increase at sites of trauma (John ansd Hunt, 1983).

Squamous cell carcinoma was one of the least recorded neoplasia along this study (5.4%). The anatomical distribution of squamous cell carcinoma was the eye (in a horse) and vulva (in a donkey). However, equine eye and external genitalia had been reported to be most common site for such type of tumours (Koch and Cowles, 1971, Strafuss 1976, Sundberg et al., 1977). Squamous cell carcinoma has a tendency to develop in areas of unpigmented skin; in horses mucocutanous junctions are commonly involved (Pulley and Stannard, 1990).

Analysis of the results of this study indicated that benign cutaneous neoplasms were more prevalent than malignant ones in equines. The ratio of malignant to benign tumours is lower in the skin than for areas of the body (Theilen & Madewell, 1987). The most encountered tumours of horses were melanoma, papilloma and fibroma while it was sarcoid and fibroma in donkeys and sarcoid and melanoma in mules.

Despite cryosurgery, hvperthermia, radiation chemotherary and laser surgery have very effective and appreciated results in the treatment of cutaneous neoplasia; sharp surgical excision remains the most available procedure for management of such cases in field situation by practitioners.

Effective treatment of skin tumours might be due to the unique ability of their early diagnosis. While skin tumours are more amenable to surgical

excision than the other types of tumours which arise form other deeper sites, some complications as skin defects, arthritis, recurrence and /or metastasis might complicate the effective management.

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LIST OF FIGURES

Fig 1: A) Aural plagues completely filling the inner surface of the left pinna of a horse. B) The right pinna of the same horse. C) The same horse after excision of the mass.

Fig 2:A) Melanoma at the base of the neck (shoulder region) in a grey coloured 15 years old horse. B) The excised mass measuring 20cm x 11cm x 6cm. C) The excised mass in cross section. D)A high power of the shoulder melanoma & amelanotic melanosarcoma.

Fig 3: A) Melanoma at the weather of a grey coloured horse. Notice the ulceration and blackish coloration. B) Melanoma covered by intact skin at the base of the tail in a grey coloured 12 years old mare. Notice two circumscribed swellings just above the anus.

Fig 4: A) A well circumscribed pedunculated fibroma in front of the shoulder joint of a donkey. B) The excised mass in cross section.

Fig 5: A well identified mass (fibroma) in the upper third of the neck adjacent to the trachea of 7 years old donkey.

Fig 6: A Sessile solitary sarcoid at the lateral aspect of the right fore limb of a donkey. B) Sessile ulcerating sarcoid at the medial aspect of the metatarsus region of a mule.

Fig 7: A) A large lobulated mass (fibrosarcoma) extending along the back of a donkey. B) The mass after its excision measuring 32m x 8cm x 6cm. C) Cross section of the excised mass. D) Photomicrograph of a fibrosarcoma. Note the wavy whorl's appearance.

Fig 8: A) A pedunculated ulcerated mass (fibroma) originating at the hind limb of 12 years old horse. B) The mass in cross section.

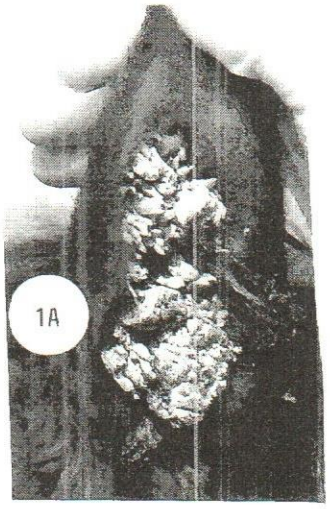
Fig 9: Multiple sarcoid affecting the right carpeel joint (arrows) of a donkey. Notice the associated carpitis.

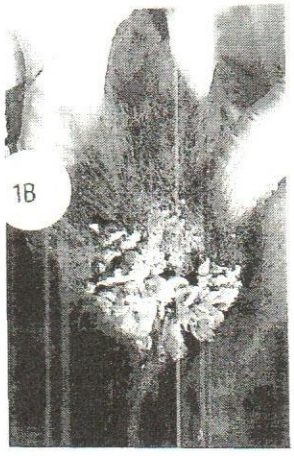
Fig 10: Multiple small masses (sarcoid) affecting both hind limbs of a donkey (arrows).

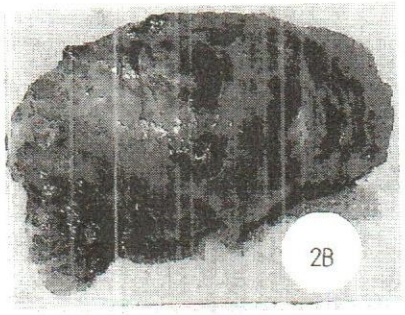
Table 1: Distribution of the encountered equine cutanous neoplasms according to breed and sex.

Type of neoplasm	Horses		Mules		Donkeys		Total
	M	F	M	F	M	F	
Sarcoid	1	1	2	1	5	3	13
Melanoma	5	2	1	1	–	1	10
Fibroma	1	2	–	–	2	2	7
papilloma	2	1	–	–	–	–	3
Sq. cell carcinoma	1	–	–	–	1	–	2
Fibro-Sarcoma	1	–	–	–	1	–	2
Total	9	5	3	2	10	8	37

M = male F = female







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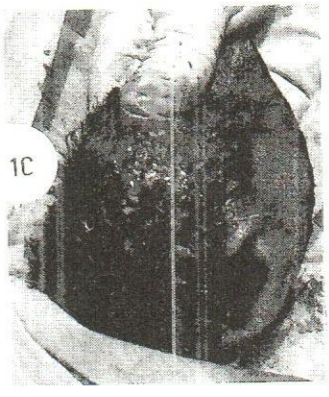

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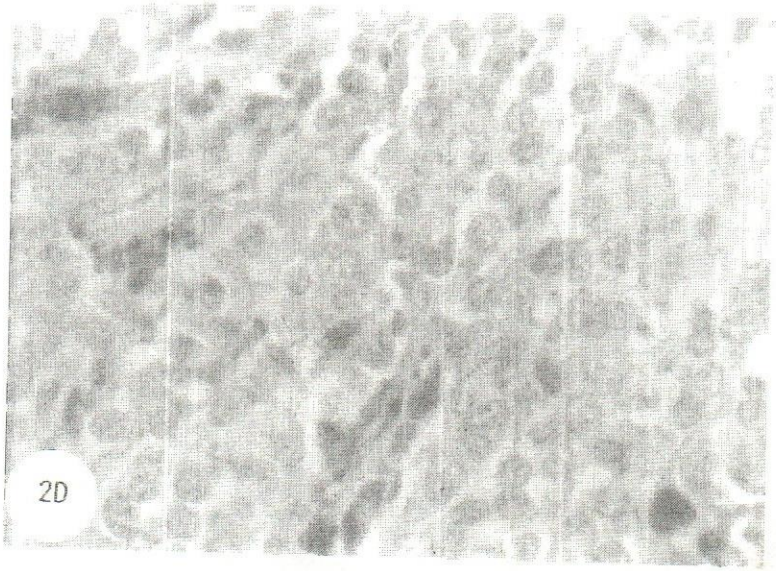
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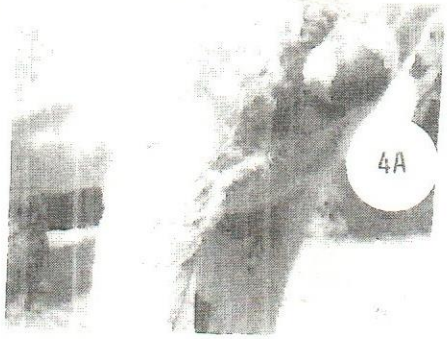
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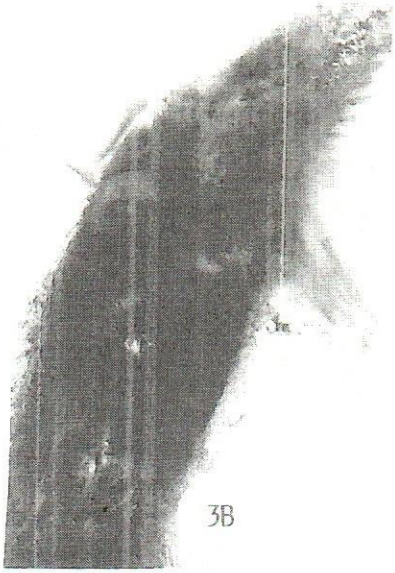
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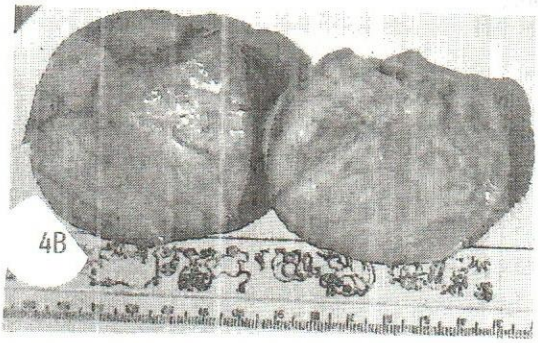
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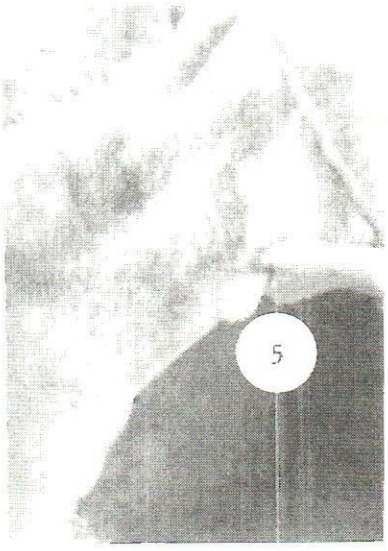

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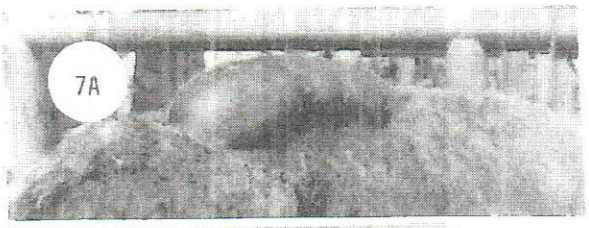

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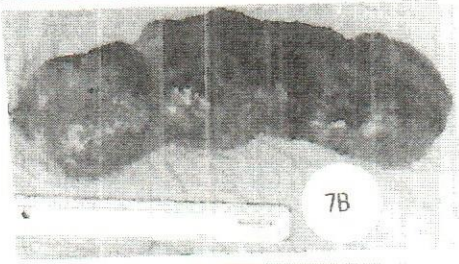

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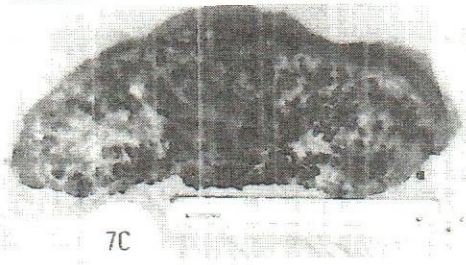

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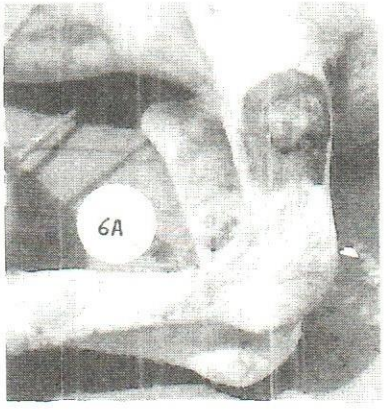

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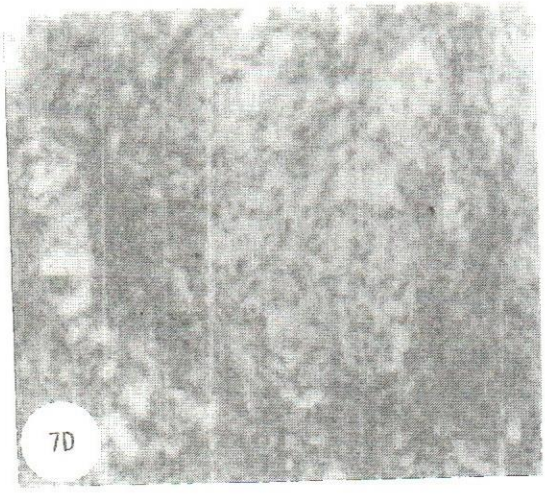

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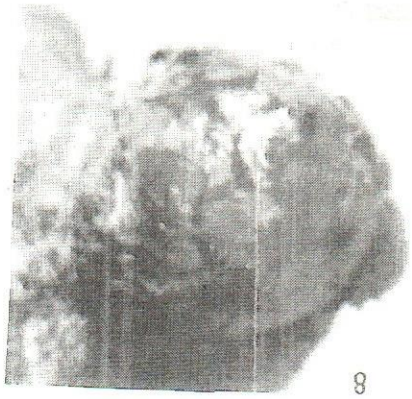

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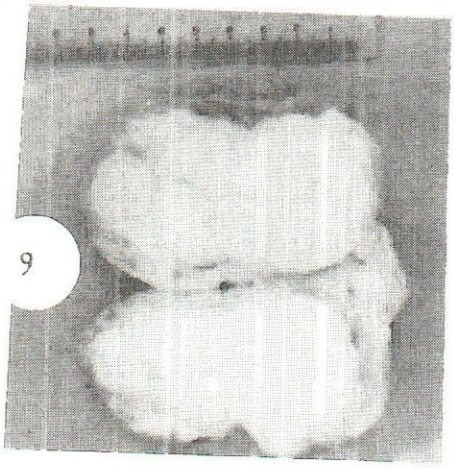

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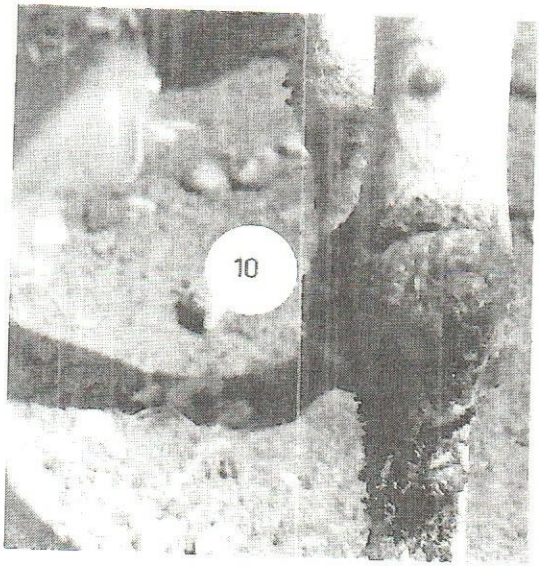

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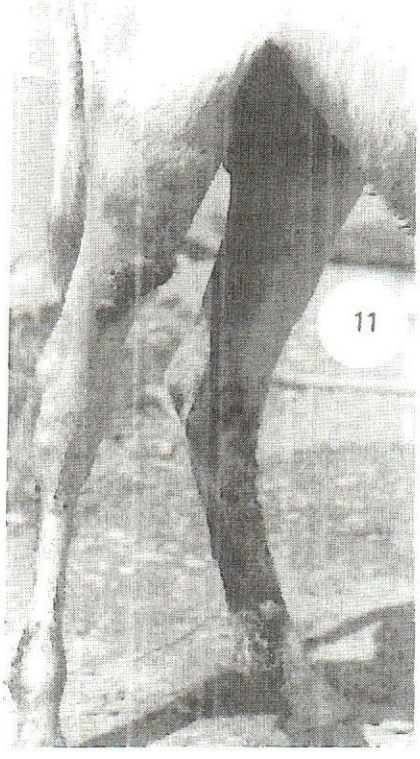

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