

15.3.28 Animal in good condition, small dry scabs as before covering little superficial excoriations.

21.6.28 One of the largest scabs has grown out forming a long horny claw-like process 1 c.m. in length. When forcibly removed this leaves a small bleeding papilla. On the left side of anus near above papilla, there is a blackish grey flat crust raised above surface and about 1 c.m. in diameter. This when removed leaves a raised ragged, bleeding surface.

15.9.28 The above tumour or raised ulcer has enlarged to 1.5 c.m. in diameter. It is not covered by crusts but presents a rough semi-dry surface.

24.9.28 The raised ulcerated tumour is about 0.5 c.m. thick and 1.5 c.m. in diameter with slightly everted edge, surface rough but slightly moist and covered by a very small amount of sticky greyish brown matter. Smear preparation from this shows that numerous spirochaetes are present together with large variety of bacteria.

27.9.28 Under local anaesthetic, $\frac{1}{2}$ grain of cocaine and two drops of adrenaline injected deeply, the tumour was removed by a circular incision and dissected out, to a depth not exceeding 0.5 c.m. The raised border of the tumour itself was found to be friable and to bleed easily on manipulation. The wound was closed by a couple of interrupted silk sutures. The wound was not treated and is healing slowly. The goat is now quite healthy and in good condition; it is being kept under observation for a further period to see whether any of the other excoriations will develop. The excised tumour was situated to the left of anus involving the edge of mucosa. It has roughly the form of a button with greyish red to brown ulcerating surface about 1.75 c.m. in diameter and 0.5 c.m. thick. It is covered by a small quantity of smeary exudate and bleeds easily when manipulated. The edges are slightly everted over the body on stalk which

is covered with skin.

Histological findings. *Specimen 8483.*

Sections were cut diametrically through the middle of tumour. On both sides ^{the} epidermis becomes raised perpendicularly for a short distance as it covers the body of tumour. Its free edge ends abruptly by going over to a loose unarranged tumour parenchyma of squamous epithelium, mixed with a good deal of inflammatory cells. There is marked thickening of the epidermis at the side, as it suddenly merges into the tumour. The thickness of epidermis is increased and appears perforated at intervals by round and oval spaces representing the papillae of corium in section. The corium contains a very large number of round cells. At the edge of the tumour this perforated appearance becomes so pronounced that the epidermis appears to become a reticulum of strands consisting of a layer or two of germinal cells. The intervening spaces are filled by round cells, neutrophils, and exudate. The transition from the epidermis to the tumour parenchyma is very distinct here. Further towards the centre the continuity becomes lost, but the same arrangement prevails, i.e. chains of basal cells sometimes bent on themselves to form tube-like structures or surrounding small nests of squamous cells. This arrangement alternates with loose masses of epithelial cells of undifferentiated type, which have characters between those of a germinal and a spinous cell, both as regards staining properties and amount of cytoplasm. The parenchyma of tumour with its raised ulcer-like surface is formed thus by a layer 3 or 4 m.m. thick, consisting mostly of such ill-defined epithelial cells loosely arranged in strands or nests and profusely intermixed with neutrophils. At many places haemorrhages have taken place near the surface. The whole structure is supported from a connective tissue bed with large amounts of round cells, by a very fine connective

tissue stroma. In one part the epithelial cells are packed together resembling squamous cells with horn pearl formation. Some of the cells are swollen and degenerate like the so-called cancrioid parasites. The rest are undifferentiated epithelial cells. Only a few mitotic figures are to be seen here and there. The sebaceous glands of skin close to tumour show a peculiar proliferation of the cells of their basal layer. These chains of deeply staining cells outline the lobulation of the glands distinctly. Faint remnants of sebaceous glands can also be distinguished in the depth of tissue under tumour. Sections stained by silver impregnation method of Levadithi, showed several elongated slender black bodies, either solid and thready, or like a string of beads usually terminated at one end by a lanceolate head or knob. It seems that these represent the spirochaetes which were very numerous in tumour just before excision.

Diagnosis.

Baso + Spino-cellular carcinoma. Mixed form

Comments.

The development of this tumour was very slow - at one time considerable regression took place. This may explain why the tumour has the characteristics of a cancrioid. This may have been brought about by the long continued irritation caused by injury and excoriation of a pre-existing basal cell carcinoma. On the other hand, the spinous-cell carcinoma may be primary and the admixture of undifferentiated cell may be due to the fact that the tumour is relatively young. A third possibility is that the tumour is really a basal cell carcinoma of the keratinising variety i.e. Carcinoma baso-cellulare parakeratodes.

It is very difficult to say to which type of epithelial tumour this case belongs to. It is for the present, therefore, left as a mixed form of the two types.

Clinical Observations No. 17296.

17.6.27 Angora she-goat, aged. Very poor and miserable condition. The body is extremely emaciated, head hanging and ears limp; dull eyes, and hairy coat soiled and tattered. The animal is being continually chased and butted by the others. The left horn is broken off and the hair around the stump and below it, on face, is matted together with dark, stinking matter, partly dried to crusts. The stump of horn itself is covered by rough, black lumps of the same matter which when removed reveal a cavity opening into frontal sinus. The wound has an intense penetrating foul smell and is partly gangrenous and filled with fly larvae in various stages of growth. The left nostril discharges a sero-purulent fluid. The left eye is covered by a purulent film and the cornea shows considerable opacity. There are distinct circumscribed, fairly firm swellings palpable in the parotid, intermandibular, throat, neck and prescapular regions on the left side only. These are painless apparently and vary from the size of a wall-nut to that of a man's fist, in the case of the prescapular. The perineum is normal. Smear preparations from the slimy matter revealed only a mixed bacterial flora. No spirochaetes are present, but large amounts of black pigment, both free and hoarded in large mononuclear cells can be distinguished.

18.6.27 Animal lying down, very weak and unable to rise. Pulse and respiration hardly perceptible. Killed for post mortem examination.

Post Mortem Findings.

Blood smear negative. Marked cachexia. Partial obstruction (pressure stenosis) of the pharynx, oesophagus, and larynx by the enlarged retropharyngeal, cervical lymphatic glands. Gangrene of the left horn stump and frontal sinus with numerous fly larvae and pigmented

tumour formation at edge of skin. Septic metastases in all lymphatic glands of left side of head and neck, as far as and including prescapular. The liver also shows metastases. Purulent panophthalmia more marked on left eye. Catarrhal rhinitis. Greenish pigmentation of kidney medulla. The affected enlarged lymphatic glands on left side were rather soft in consistence, but not fluctuating, on section presented a greyish, moist, somewhat spongy appearance, with very foetid smell, and reddish-grey fluid oozing out freely. Smears from this showed a profuse growth of short coccobacilli sometimes in chains. The respective sizes of these glands were about as follows, parotid-hen's egg; medial and lateral retropharyngeal same; cranial and caudal cervical-duck's egg; prescapular man's fist. Those on the right side were unaffected and normal in appearance. An irregular greyish to black, ragged growth is found on the skin round the horn stump. It is irregularly lobed, some parts being like small stalked outgrowths and is covered by tough black crusts.

Histological Findings. *Specimen 6985.*

Tumour and metastases. A strong connective tissue stroma is arranged in arborescent fashion supporting whorl-like masses of tumour cells between its branches. Following the many depressions and processes of the surface of tumour, a thick layer of necrotic tissue and accumulation of inflammatory exudate and pigment forms the external covering. The contact zone between the two is fairly sharply defined, and is characterised by numerous blood vessels and capillaries. The tumour tissue below this is remarkably free of any inflammatory cell infiltration. The arrangement of the tumour cells themselves varies somewhat, but the general impression received is similar to that of the other described tumours, i.e. sarcoma-like uniformity of arrangement, with distinct epithelial staining properties of nuclei and protoplasm. Pigment (melanin) is present in large

amounts and give the black colour to tumour. It is produced by the tumour cells, some is hoarded in connective tissue and a good deal is contained in the necrotic outer layer.

The tumour cells appear more closely packed together and stain a deep purple colour. In parts they are arranged in definite solid strands often in slender processes, one or two cells thick, whereas in others the cells seem scattered uniformly in small whorls in between the stroma. These cells have polygonal, spindle, or dendritic shapes, but the nucleus is round or oval and contains one or more well formed nucleoli. Mitotic figures are very frequent. This is significant when considered with the widespread metastases in the liver and in the whole chain of lymphatic glands on that side of the head and neck. All these glands show the same picture, i.e. infiltrating foci of tumour tissue identical to that of parent growth. These are surrounded by extended necrobiotic changes of the lymphatic cells. Pigment is present, but to a very limited extent only.

Diagnosis.

Pigmented baso-cellular carcinoma of the base of horn with extensive metastases in lymph glands of corresponding side of head and neck and in the liver.

Comments.

This tumour has certain points of difference from those already described. The great frequency with which mitoses are present in the tumour cells and the extreme malignancy shown, might lead one to think that the tumour was different. The structure, however, together with the pigmentation, leave little doubt that it is an epithelial tumour of the basal cell variety. There is absolutely no sign of keratinisation. It would be interesting to know what factor determines the malignancy seen in this case and 17297.

Clinical Observations No. 17297.

17.6.27 Angora she-goat. Aged, condition poor.

A large pedunculated, black tumour is attached to the left of vulva near its upper commissure. It has only a very short neck and is about 4 c.m. in diameter. Under the tail in the depth of the depression, and covered partly by a thick cheesy mass, is a small pink protuberance the size of a pea; it is soft and smooth and bleeds easily when scraped lightly. The larger tumour is covered by hard dry scabs. When these are removed a dirty greyish-black, purulent fluid is found covering the easily bleeding, spongy black surface. There is a putrid odour from this region and handling seems very painful to animal.

A smear from this material shows a varied growth of yeast cells, cocci, bacteria of all kinds, but no spirochaetes.

23.6.27 Fly larvae are found around tumour, they are busy burrowing their way into it. These maggots were destroyed with turpentine.

30.6.27 Maggots have disappeared altogether from the larger tumour. In the depth of the tail recess two pea-sized pink soft protuberances are seen.

9.7.27 The small pink growths under the tail have decreased in size. Large tumour is covered with thick tenacious crusts of dry exudate, blood and faeces.

22.7.27 A few maggots have appeared and are burrowing into tumour.

4.8.27 Smear from surface of tumour shows for the first time the presence of spirochaetes in addition to the varied bacteria present.

11.8.27 The tumour is very ragged in appearance as if it had been torn down the middle. There are a few maggots present and the surrounding tissues are much soiled

and caked over with black exudate. The vulva is much swollen, especially on the right side, so that it is distorted and pushed over to the left.

15.8.27 Tumour much decreased in size, the centre has been eaten away by maggots, which are still occupying the cavity. The appearance now is that of a cup-shaped, ragged, and pitted or spongy cavity attached to skin by a slightly narrower and shallow base., The right side of vulva is still much swollen and distorted to the left, the swelling being doughy in character, and reddened.

2.9.27 Maggots present in the ulcerated tumour. Right side of vulva stands out swollen and painful. The animal shows great uneasiness, constantly biting, licking or horning the parts surrounding tumour. It flicks its tail continuously and stamps its feet, and is generally very sensitive to flies settling on and around tumour. It tries to creep and lie down into darkest corners of box, or in between other goats. The condition of animal is naturally very poor, even though eating fairly well.

13.9.27 A new crop of young fly larvae occupies the tumour which consists now of a thick swollen, and ragged ring, surrounding a much pitted and widened bed, below the level of skin. All that is left of the original tumour is the flatter out and widened stalk, in which the maggots have burrowed. The animal shows signs of intense and constant irritation.

23.9.27 No maggots visible. The tumour has now the appearance of a large elevated flat ulcer about 10 c.m. in diameter and 3 c.m. thick extending above vulva to anus, and further down to the right of vulva the latter being pushed over to the left. The surface is black, roughly lobulated, or pitted and fissured and covered by slimy, stinking, dark brown, exudate. The actual swelling of vulva has now subsided somewhat.

7.10.27 No maggots present, putrid greenish-grey, necrotic areas over bed of tumour; near the anus a small papillomatous greyish swelling has made its appearance. Smear preparation still shows numerous spirochaetes in addition to the varied bacterial flora.

15.10.27 Tumour still larger, flat, with very irregularly lobulated, gangrenous surface. Numerous maggots present. Animal seems in great distress, most of the time. Stamps its feet, flicks tail, scratches with horn, bites and licks anus and tumour almost viciously, rubs itself along wall, lies down in corners, with head to tail in attempting to evade the flies. Defaecation is still unaffected but during the act short grunts are emitted.

19.10.27 Defaecation slightly impaired and painful. Irritation very severe.

25.10.27 Large numbers of maggots eating away tumour. Animal feeds fairly well but very poor and weak.

2.11.27 A good deal of the tumour has been eaten away by the maggots. The surface is pitted and fissured, partly covered by crusts and necrotic tissue. The vulva is still swollen, but much less than before. The tumour measures now only 6 c.m. across and 1.5 c.m. in thickness. On account of the great suffering due to maggots, these were killed off with Xylol. This substance destroys them practically instantaneously and does not seem to cause any additional discomfort to the animal.

3.11.27 The tumour is free of maggots and has contracted considerably, being also much cleaner than it has been for a long time. The goat, however, died during the day, on being turned out into paddock.

Post Mortem Findings.

Marked cachexia. Primary tumour between anus and vulva in the form of a shallow ulcer with indurated border. It extends transversely downward and to the right of vulva.

Extensive metastases in the supramammary, sublumbar, mediastinal, bronchial, renal, and smaller pelvic lymphatic glands, in the lungs, heart, pancreas, liver and both kidneys. In the latter the fibrous capsule is distended by an albuminous fluid, probably serum. This is probably due to presence of a large haematoma around one of the metastases on cortex. Acute purulent broncho-pneumonia of left lung. Hydropericardium.

Histological Findings. *Specimen 7481*

The tumour presents many inequalities, the surface being deeply cut into by fissures. The whole tumour has a somewhat varied appearance. The greater part is made up of a large amount of connective tissue fibres, running in various directions, forming the stroma of large masses of epithelial cells. These are somewhat similar to the basal cells of epidermis. Near the surface there is a vascular zone which is covered by a necrotic layer of exudate. The tumour cells themselves vary much in size and shape. They are large, rounded or oval in some parts. In others they are elongated and spindle-shaped and thrown into more or less parallel directions when lying near or amongst the fibroblasts forming the stroma. There is some pigment (melanin) in the cells, but only in localised areas. These cells penetrate much deeper than in the other tumours. They lie in some places right amongst the muscle fibres below the subcutis. Mitotic figures are fairly frequent. The numerous metastases in kidney, liver, lymph glands, heart, pancreas, lung etc. present a most uniform appearance, being composed essentially of round or irregular epithelial cells packed fairly closely together and resembling the picture of a round cell sarcoma. The edges of metastatic foci in the various organs are not encapsulated and in the case of the kidney the remains of atrophied and compressed tubules can still be seen isolated within the tumour tissue. Very

little pigment is formed in most of the metastases, those in supramammary glands show pigmentation to a greater extent. Mitoses here are rare as compared to parent tumour.

Diagnosis.

Pigmented basal cell carcinoma.

With metastases in most internal organs and lymph glands.

Comments.

This tumour in appearance and behaviour resembles very much ~~like~~ the previous case i.e. 17296. Here again there was no sign of keratinisation.

Clinical Observations No. 17298.

17.6.27 Angora she-goat. Aged, in poor condition on arrival. Skin of face and perineum is pigmented ⁱ on patches. Skin of buttocks somewhat thickened, harsh, bound, and covered with desquamated epithelial flakes (not due to mange) Vulva much thick^eened and swollen, on the left side it has a deep wound 2.5x1 c.m., as if due to laceration with some blunt object, some time previous. This wound is covered by tough scabs, which after removal leave a dirty, granulating, fissured bed. This contains fould smelling greyish pus, and bleeds very easily when handled. There is also a small superficial excoriation of skin about 1 c.m. in diameter just above anus. This, however, is clean and shows hardly any inflammation. Smear from exudate of wound shows many bacteria mostly of short type, a few of the fusiform type, but no spirochaetes.

23.8.27 Dry exudate and blood crust closely adherent to wound on vulva. No spirochaetes.

4.8.27 Vulva wound appears deeper and is covered by thick blackish crusts as before. Smear from bed of ulcer shows a rich growth of short cocco-bacilli. The small ulceration above anus is somewhat moist and smears from it show numerous spirochaetes, with hardly any bacteria.

11.8.27 Vulva much swollen, crusts have been removed by force, probably horning, as the ulcer bleeds and is covered by blood clots.

6.9.27 Left vulva lip swollen. The wound along its centre has widened and deepened. It presents a ragged, ulcerated and spongy bed. There are granulations at edge of skin, and crusts cover the whole wound or ulcer.

23.9.27 The ulcer remains about the same, there is a slight greyish, purulent discharge from beneath the scabs. On the vulva near the ventral ^commissure, a small granulomatous, easily bleeding growth has appeared. It is about the size of a hazel nut.

15.10.27 Animal shows signs of irritation, flicks tail continually and is sensitive to handling of perineal parts.

19.10.27 The vulva is now much deformed. The left side with ulcer is greatly swollen and the aperture is displaced to the right.

29.10.27 The appearance of perineum has changed completely. Through the swelling of underlying tissue, the bed of the ulcer on left lip of vulva has become raised and everted. It now presents an expanded, mushroom-like appearance with ragged surface measuring 3.5 c.m. high and 2.5. c.m. wide. It is covered by a slimy purulent matter, partly drying up into crusts. See Fig.

2.11.27 Tumour has somewhat enlarged, measuring now 4 c.m. x 2.5 c.m. wide, and becomes practically confluent at lower extremity with the small tumour near ventral commissure of vulva. The animal is in poor condition but feeds well and is still fairly lively.

21.11.27 Tumour about the same, but animal is worried by flies. It lies down in corners with its tail close to the wall, or creeps in amongst other goats.

17.12.27 Animal is much worried and distinctly poorer in condition. It has periodic fits of intense irritation of perineum. It suddenly bites and licks furiously at and around tumour, runs in circles, and jumps in and out of the water trough and behaves generally as if in great distress.

22.12.27 The tumour on left side of vulva is flat and expanded as before, the surface presents a spongy surface but no maggots ~~have yet been~~ ^{can be} seen. The supramammary lymphatic glands on palpation show no distinct enlargement, although the left is more prominent than the right.

28.12.27 Animal is standing with head low down in a corner of box, continually flicking ^{its} tail and stamping its hind legs. Now and then it bites or licks round the tumour. It also tries to bite other goats standing near by.

3.1.28 Tumour presents raw, ragged, raised edges on left side of vulva. Supramammary lymphatic glands on left side feels slightly enlarged.

24.1.28 Animal is in very poor condition, bleats very feebly when the very tender affected parts are handled. It suffers still from the marked irritation of tumour even though maggots are not present. It lies down most of the time with head thrown sideways to the perineum. It gets up frequently and wanders about and repeatedly jumps in and out of the water trough. The supramammary lymph glands are unequal in size, the right one the size of a french bean, the left like a small wall nut.

30.1.28 As above, symptoms of continuous and intense irritation. Animal seems to work itself up into a frenzy at times, runs around, bites and scratches itself, even tries to bite other goats and persons standing by. Then it assumes a straining attitude as if trying to defaecate but nothing is passed. Defaecation is painful and takes place with some difficulty as evidenced by groaning. Vulva is swollen and retracted, the tumour on its left is practically the same.

7.2.28 Animal stands most of time in a straining attitude with hocks flexed, and back arched. The vulva is much enlarged and swollen especially the right side which reaches the size of a hen's egg. No maggots are present

17.2.28 Marked emaciation, straining attitude most of time. Mouth and lips are soiled with slimy brownish matter from constant biting and licking tumour, and the surrounding tissues. The left supramammary gland is the size of a wall-nut, and firm to the feel. The right one about normal size. The tumour consists of a large ulcerated, ragged cavity on the left lip of vulva. The edges are raised and indurated and the rest of vulva is greatly swollen.

25.2.28 Animal crouching down with arched back most of time, the tumour is in a repulsive semi-gangrenous state.

1.3.28 The left supramammary lymphatic gland is now the size of a small orange and firm. The right one is still about the size of a french bean.

2.3.28 Under complete chloral anaesthesia (2 g.† intrajugular) the left supramammary gland was removed surgically for transplantation purposes. The enucleated gland measured 4 c.m. in diameter and had a rather soft, semi-fluctuating consistence. On section the centre contained a small amount of thick oily greyish fluid with foetid smell. The substance around this was rather soft and friable and greyish in colour. Very little glandular tissue was left, forming a shell around the tumour tissue. The whole appears enclosed in a connective tissue capsule. Some of this tissue was used in transplantation experiment No. 7.

9.3.28 Inflammatory oedema at seat of operation. Drainage provided. Temperature of animal rising. Sniffing, nasal catarrh and inspiratory r^âgles.

11.3.28 Animal much worse, lying down. Respiration difficult.

13.3.28 Found dead in ^{the} morning. University of Pretoria, Library Services, 2013

Post Mortem Findings.

Marked cachexia. Gangrenous pneumonia. Ulcerated tumour vulva, with two metastatic foci, the size of peas, in remaining right supramammary gland.

Histological Findings.

Specimen No. 7831

Strong connective tissue stroma with mixture of smooth muscle. Amongst this are strewn numerous cylinders and strands of epithelial cells of various sizes and shapes, generally with centres of homogenous stratified substance (keratin). The tissue consists of numerous slender projections which are very vascular near surface and are covered by a necrotic layer. There are also a number of superficial haemorrhages. The glandular tissue of supramammary gland is separated from the newgrowth by a fairly thick, loose connective tissue capsule containing much lymphoid cells. The newgrowth consists essentially of spinous epithelial cells, in most parts arranged in solid masses or more usually in compact rings and strands. Many neutrophiles are swollen degenerated cells (canceroid parasites) are present. In other parts again the epithelial cells grow into irregular strands of elongated cells penetrating the lymphoid tissue like roots. Many show mitotic figures. See fig.

Diagnosis.

Spino-cellular carcinoma (Canceroid) with metastases in both supramammary lymph gland.

Comments.

This case illustrates very well the intense irritation, amounting to torture, that is suffered by an animal affected with cancer.

Clinical Observation. No. 17299.

Angora she-goat. Aged, condition poor.

17.6.27 On the upper surface of the left ear extending from its middle towards the tip is a large,