Clinical and other Notes.

A BRIEF DESCRIPTION OF A CASE OF MOLLUSCUM CONTAGIOSUM, WITH SPECIAL REFERENCE TO THE ISOLATION OF A CULTURABLE MICRO-ORGANISM FROM THE LESIONS.

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The following observations were made on a case of molluscum contagiosum, with a view to ascertaining whether a culturable organism is associated with the lesion and its precise significance as regards the aetiology of the condition.

In January, 1923, Pte. A., of the 2nd Battalion Royal Ulster Rifles, presented himself at the medical inspection room, complaining of the occurrence of wart-like growths in the right axilla. The condition had begun some two months previously with the appearance of several small sessile papules, which slowly increased in size and became more numerous. The patient experienced no pain or inconvenience as a result of their growth, and their presence was discovered by accident.

Examination revealed the presence of some twelve to fourteen small discrete wart-like growths in the right axilla and neighbouring parts, for the most part congregated together, though a few were outlying. The distribution suggested that contact infection played an important part in the site of the origin of the various tumours. Individually, they varied from an eighth to a quarter of an inch in diameter, and presented an appearance resembling a mother-of-pearl shirt button, the smaller ones being sessile, the larger tending to become pedunculated.

They presented the appearance of a waxy-rounded prominence which rose abruptly from the surface of the surrounding skin rather than that of a wart. The top was flat, and did not present the papilliform appearance of a wart, while a small puckered central depression was visible in the larger variety. In consistence these prominences were firm and solid, and gave the impression of a kernel within the overlying skin. In colour they were a delicate shade of pink. Normally there was no appearance of any reaction in the surrounding tissues, though in one case the tumour had become the seat of inflammation and suppuration with the formation of a small pyogenic abscess. The tumour was freely movable, and showed no attachment to the deeper structures.

For the purposes of examination one of the growths was excised, embedded in paraffin, and sections were cut. The tumour was found to con-
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sist of a cyst-like structure. The wall of the cyst was composed of a number of conical bodies with their bases directed towards the periphery and their apices pointing towards a central cavity; and separated from one another by fibrous septa continuous with the surrounding fibrous tissue of the corium. Except in the neighbourhood of the common central opening where the epithelial lining became continuous with the epidermis, the tumour, growing down from the basal layer of the rete mucosum, was situated in the corium.

The bodies were composed of a series of layers of cells which varied in character according to their depth from the periphery of the tumour.

The outer cells were columnar in shape, regular in arrangement, and resembled the cells of the palisade layer of the skin. Internal to these the cells assumed a cuboidal formation, and began to show signs of degeneration in that their nuclei were less distinct, and took up the stain less readily. Towards the centre of the tumour this process of degeneration had become more complete, with the result that the regular cell formation of the periphery had given place to a homogeneous matrix, in which was embedded the structureless remains of the cells which were gradually shed off into the interior of the tumour, and gave rise to the whitish pultaceous debris which formed the central portion of these tumours.

It is now accepted that the clear hyaline appearance surrounding the nucleus of the cells in this condition is due to imperfect corification of the cells of the rete mucosum, and as a result masses of hyaline or colloid material are formed instead of keratin.

Although up to the present no specific infective agent has been discovered, the contagious nature of this condition has long been recognized. The frequency with which the condition occurs in epidemics, particularly in institutions for children, the authenticated cases of accidental inoculation, and, lastly, the experimental work of Retzius, Pautry, Haab, and Pick, clearly point to the presence of some infecting agent. The condition appears to be particularly prone to be spread by public baths—so much so that in Damascus it is known by an Arab designation meaning "the itch of the bath" (Norman Walker).

Various theories as to the nature of the infecting agent have been proposed, of which the following may be quoted—

1. Neisser, that the condition is due to a protozoon which he describes as occurring within the interior of the tumour and to which he gave the name molluscum bodies. These have since been shown to be varieties of degenerated cells shed into the interior from the inner wall of the tumour.

2. Juliusberg considers the condition to be due to a filterable virus.

3. Lipschutz described the presence of minute organisms in the degenerated epithelial cells of the tumour to which he gave the name Strongyloplasma hominis.

4. The frequent association of the condition with pediculosis led Ehrmann to suggest that pediculi might be the intermediate host of the
parasite. If this were true we might have expected molluscum contagiosum to have been common in the late war, which was not the case.

With a view to ascertaining if any culturable organisms could be isolated from the lesions of the tubercles was opened and cultures were made from the interior on agar and blood-smeared agar (Pfeiffer) and cultured aerobically and anaerobically after the method of Wright. After incubation at 37° C. for twenty-four hours no growth occurred in the tubes cultured under aerobic conditions, or on the plain agar cultured anaerobically. On the blood-smeared agar cultured under anaerobic conditions a scanty pellicle of growth was visible. The individual colonies were clear and dewdrop-like in appearance, and closely resembled those of streptococci, being heaped up in the centre and with a smooth rounded border. In size they were almost indistinguishable individually with the naked eye and required a hand lens for their identification.

In stained smears the organism proved to be a micrococcus about seven microns in diameter, staining readily with all the aniline dyes, and retaining the stain in Gram's method. It did not occur in chains but singly or in small groups.

Subcultures were made on blood agar, blood-smeared agar, plain agar bouillon, serum bouillon (human serum being used), and peptone water. Aerobic and anaerobic methods were again employed. After twenty-four hours at 37° C. growth was obtained only on the blood agar, blood-smeared agar, and serum bouillon when cultured anaerobically. The surface growth on blood agar and blood-smeared agar presented the same appearance as in the primary culture. Growth occurred in the serum bouillon with uniform turbidity and only slight sedimentation. Films prepared from this bouillon revealed a coccus growing singly or in small clusters, never in chains. After forty-eight hours' incubation minute signs of growth were visible on the plain agar anaerobic culture. By the end of seven days the colonies had enlarged to two to three millimetres in diameter, and were heaped up in the centre and shelved off towards the edges. Subsequent subcultures on plain agar grew more freely but blood agar was found to be the optimum medium for growth.

Similar experiments were repeated on subsequent occasions, different tumours being chosen in each case. Only those lesions which showed no signs of secondary infection were chosen. In all cases a pure culture was obtained on blood agar when grown under anaerobic conditions. The primary culture on plain agar refused to grow except when a considerable quantity of blood was transferred with the inoculum to the medium. Subcultures grew on plain agar at first with difficulty, later regularly. Further, in order to maintain a series of subcultures, it was found necessary to subculture every ten to fourteen days; otherwise the growth tended to die out.

In order to ascertain if organisms such as those obtained on culture were present in the tumour itself, and if so their precise situation, sections
of the tumour were stained by Gram's method. Such sections showed the presence of numerous Gram-positive organisms situated in the interior of the tumour and particularly arranged in the homogeneous matrix around the inner wall and adhering to the surface of, but never inside, the degenerated epithelial cells. The inference is that these organisms in vivo are not incorporated in any of the formed or degenerated elements of the tumour, or inside the degenerated cells as was described by Lipschutz, but are free in the cavity, and on section only those are preserved which have adhered to the homogeneous debris of the interior or to the surface of the degenerated and cast off epithelial cells.

Inoculation experiments were carried out on guinea-pigs, rabbits and monkeys. The cultures were inoculated cutaneously after scarification, intradermally and subcutaneously, but so far without success.

To summarize, the following points are of interest in connexion with the above case:

1. The demonstration of a Gram-positive micrococcus in stained sections of the tumour, which possibly corresponds to the micro-organism described by Lipschutz.

2. The repeated isolation in pure culture of a Gram-positive micrococcus from separate lesions and at varying intervals.

3. The fact that such cocci are obligatory anaerobes: a characteristic which one would expect to find in an organism growing within a closed cavity, such as the tumour, and deprived of blood supply and oxygen.

Unfortunately no other cases of molluscum contagiosum have been encountered, so it has not been possible to determine the constancy of the association of the organism with that condition. The case is recorded in the hope that other workers may confirm my observations.

In conclusion, I wish to express my gratitude to Colonel F. J. Brakenbridge, C.M.G., R.A.M.C., for his assistance in compiling this report; and to Major W. R. O'Farrell, R.A.M.C., for his many useful suggestions and his help in preparing the sections.

[Note.—A culture of the organism isolated from the above case was submitted to Lieutenant-Colonel Perry, Professor of Pathology, R.A.M. College, who inoculated a series of rabbits by scarification and by the intracutaneous and subcutaneous methods without any obvious pathological lesion resulting in the inoculated animals. In the absence of this important experimental proof of the specific pathogenicity of the microbe, it is considered that its pathological significance is doubtful.—EDITOR.]

REFERENCES.

HEKLOEN and RIESAAN. "Text-Book of Pathology."
HARTZELL. "Diseases of the Skin."
NORMAN WALKER. "Introduction to Dermatology."