

after completion of the 4th month of pregnancy, we observed no injury either to the mother or the foetus⁽¹⁷⁾.

However, when the foetus shows some degree of maturity, it is preferable to induce delivery^(1,5).

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Morphological and histological changes in the intestinal mucosa after the urinary shunt operation in gynaecology

by

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Some interest seems to attach to the problem of the morphological and histological changes that may be induced on the intestinal wall due to more or less prolonged contact with the urine, following a permanent urinary shunt operation, especially in the light of many contradictory reports in the literature concerning the behaviour of the intestinal mucosa of the excluded and not completely excluded segments of the intestine^(1,3,4,5,7,9,10,11,12,13).

Whenever it has been possible to examine the intestinal tract throughout its

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width, it has been clear that the intestinal mucosa shows good tolerance of the chronic irritant stimulus provided by urine (²); in fact, clinical observation bears witness to the adaptation of the intestine to the means of absorption of the constituents of the urine with which it comes into contact, so that the biochemical changes that are normally encountered directly after the operation tend, after a certain period of time, to be reduced and even actually to disappear.

Certainly the problem of absorption is all the more complex in that many other factors of a general nature, extraneous to the local physiopathology of the intestinal segment, may contribute to the determination of the various phenomena.

We are concerned with two similar organs, the intestinal tract and the bladder, one of which may be used in replacement of the other; they are, in fact, both hollow organs, clothed with a mucous membrane and equipped with smooth muscle.

However, the structural differences that they possess, in relation to their two different functional purposes, remind us that prolonged contact of urine with intestinal mucosa may to some extent determine some of the modifications or change in the latter's capacity for absorption.

Before dealing with this problem we need to describe the morphological differences both of the intestinal mucosa and of the bladder.

The structure of the ileum is characterized by the auxiliary valves and the villi, which are provided not only with a stroma with abundant lymphatic vessels and lymphatic tissue, but also with ordinary protective columnar epithelium, with highly differentiated cells: fundamental cells, muciparous cells and argentaffin cells.

This epithelium is also provided with a striated cuticular border.

At the level of the colon the morphology is less complex, due to the absence of villi and slave valves, but the glandular elements are numerous and well developed; large quantities of muciparous cells are present here, in a superficial position.

The vesical mucosa shows a somewhat simpler morphology, consisting of a typical protective epithelium, or transitional epithelium, or pseudo-stratified epithelium, provided with three well differentiated kinds of cells: basal cells, racket cells, umbrella cells, and a special cowl-like structure, with no glandular elements, directly in contact with the muscular layer.

The pseudo-stratification is due to the different heights of the nuclei of the epithelial cells, which are arranged « anyhow » in a single stratum.

In view of the contrasting results obtained by other authors (^{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13}), we carried out some investigations, the conclusions of which are described below, with the aim of verifying possible morphological and histological changes in some cases of urinary shunt carried out in our clinic.

MATERIAL AND METHODS

The material available for our investigation consisted of biopsy samples of intestinal mucosa obtained from 4 patients suffering from genital cancer, upon whom the radical operations of anterior pelvicotomy (3 cases) and total pelvicotomy (1 case) had been performed, with a subsequent urinary shunt by means of ureterosigmoidostomy (3 cases) and ureterocolostomy (1 case).

The site of the biopsy, which was always aimed at and performed upon the anterior wall of the intestine, so as to avoid possible injury at the level of the

entero-ureteral stoma, occupied the area 8-10 cm from the anal orifice and 5 cm from the cutaneous stoma.

The mucosa was obtained at regular intervals of time, from three to six months (one year in one case) after the operation. It was fixed in Susa's fluid, with paraffin inclusion. The section obtained were stained with haematoxylin and eosin, Mallory's azan stain and by McManus' method.

RESULTS

All the preparations observed* gave the following results: on general inspection it was seen that the well known structure of the intestinal mucosa was clearly evident in all the groups of samples.

In the fragments of mucosa obtained one month after the operation, very marked muciparous activity was evident, in the epithelial cells covering the glandular elements (Fig. 1); and desquamated cells were present within them. In this first group there was only slight oedema of the submucosa and consequent

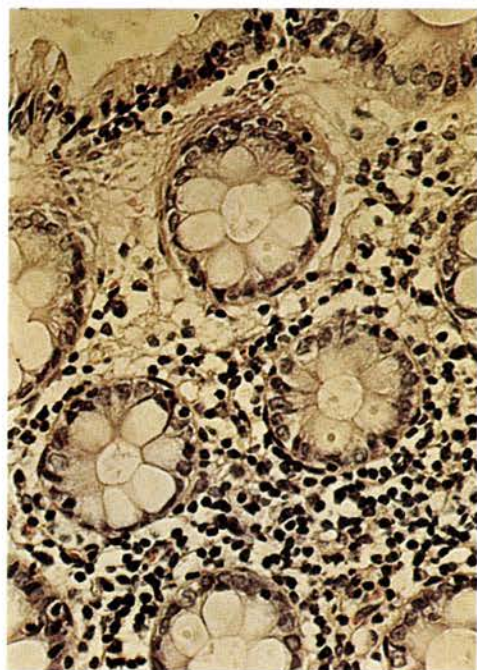


FIG. 1.



FIG. 2.

dissociation of the chorion, while leuco-histocytic parvicellular infiltration was very conspicuous.

In the preparations of the second group, carried out on samples three months after the operations, muciparous activity of the glandular cellular elements was moderate; stromal oedema had become attenuated or had disappeared (Fig. 2). The

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glandular elements seemed to be spaced out, due to the diffuse stromal parvicular infiltration.

No other changes were demonstrated relevant to the mucosa and submucosa.

Observation of the preparations of the third group, carried out six months after the operation, confirmed the previous findings absence of any oedema and persistence of diffuse focal leuco-histiocytic infiltration (Figs. 3 and 4) in the submucosa.

The absence of any changes was confirmed by the histological picture obtained when samples were taken one year after the urinary shunt operation.

DISCUSSION

The problem of tolerance on the part of the intestinal mucosa when faced with prolonged contact with urine had to be dealt with as soon as the first operations for ureterosigmoidostomy were performed.

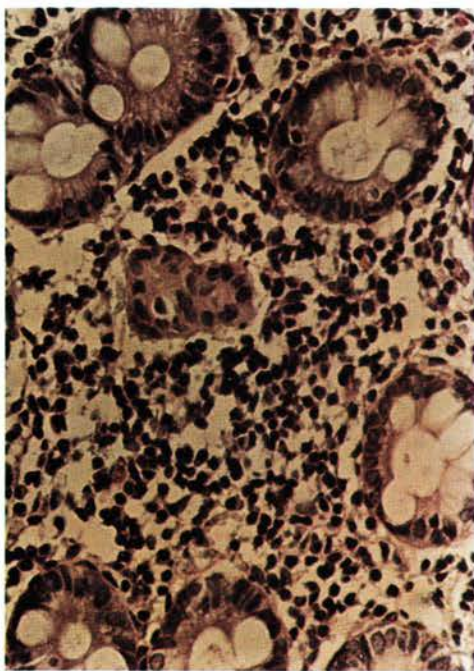


FIG. 3.

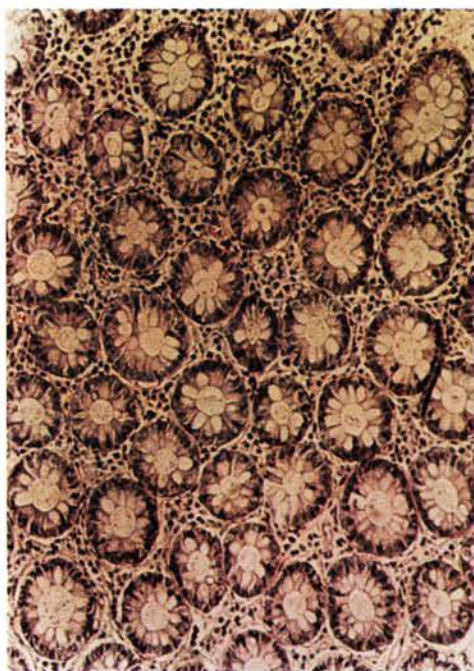


FIG. 4.

The absence of any important changes, particularly in the final tract, was supported by Chaput and later by Boari who, after observing vesico-rectal fistulae, denied that the presence of urine in the rectum gave rise to uraemia and was followed by serious deterioration of the mucosa. They found only connective tissue hypertrophy and hypertrophy of the lymphatic follicles. Other authors have denied that any macroscopic structural changes occurred in the musculature of the colon; while other claimed that they had observed morphological changes, even amounting to true metaplasia of the intestinal epithelium (^{13, 14, 16}).

In the literature, moderate oedema of the submucosa has been reported in tracts below the neostomy, as well as desquamation of the mucosa (³).

It is interesting that there is duplication of the observations made by those who maintain that after a few months, and still more obviously one year after the operation, the intestinal mucosa below the neostomy shows flattening of the protective epithelium, with marked thickening of the cuticle, which sometimes seems to be multi-layered and with increased positive staining with PAS (Periodic Acid Schiff).

This formation might be considered analagous to the covering stratum of glycoprotein nature described on the surfaces of the transitional epithelium of some animals (^{2,6,11}), to which a precise protective task is assigned.

Associated with these particular changes was a general atrophy of the mucosa, with increased connective tissue interposed between the glands, which was the site of a fibroblastic-histiocytic reaction.

As regards the origin of these changes the hypothesis has been maintained that the urine first acts upon the epithelium, modifying the cuticular stratum. This is followed by true cellular injury, with more deep-seated changes, and regeneration is then stimulated, accompanied by changes in the neighbouring connective tissue with infiltration of the mobile cells (histiocytic and fibroblastic reaction).

This reaction is said to lead, via a second phase of sclerosis, to a reduction in circulation, such as to explain both the subsequent picture of general atrophy of the mucosa and the diminution of the power of absorption.

The cystoid dilatation described by some authors (^{13,15,16}) may be attributed to sclerotic processes involving the mucosa and submucosa.

These authors, however, claim that the deepest structural changes are found to involve the rectum. They observed one case in which the mucosa consisted in some tracts of a slender layer of cylindrical or cubic cells, or only a single thread of flattened lamellated elements, giving the impression that the intestinal lumen was directly limited by the muscularis mucosae.

It seems reasonable to suppose from the above that the by-passing of the urine into a completely shunt-off segment of intestine may really produce a different mucosal response as compared to cases in which the maintenance of intestinal continuity permits the mixing of urine with the faeces.

In such cases, in fact (⁸), two different types of lesion of the intestinal wall have been observed: in mild stages only acute inflammation of the mucosa was evident, with slight signs of superficial desquamation and hypersecretion of the glandular epithelium; in the more advanced stages there was necrosis of the superficial strata of the mucosa with persistence of the epithelial elements at the base of the crypts, with thickening of the muscularis mucosae and signs of sclerosis, and persistence of a few capillaries in the submucosa.

Others have stated that there is an initial stage of hypersecretion of both the superficial and glandular muciparous elements, with slight signs of degeneration affecting both the protective and the glandular epithelium, and signs of inflammation affecting the stroma.

At a longer time after the operation, accentuation of the signs of generation has been found, with desquamation, diminution of glandular hypersecretion and slight lymphocytic and parvicellular infiltration.

As regards our own experience it can be maintained, from the results obtained, that the changes induced in the intestinal mucosa due to the constant contact of urine are of slight extent, and limited to the more superficial layers, without

any determinant and sustained alterations in the structure.

It may certainly be objected that with our method it has been possible to examine only a small part of the mucosa, but nevertheless, having taken the samples at regular intervals of time, the uniformity of the changes encountered must confer sufficient reliability upon our results.

We think, therefore, that the lack of agreement in the results obtained by various authors may be the result of investigations carried out under different experimental or clinical conditions, and most of all at different periods of time after the operation, so that the various changes described may represent successive phases of the same process of adaptation encountered by the mucosa in relation to the different utilization of the intestinal segment (continent new bladder, or ordinary urinary conduit), and it is thus natural that wherever the contact is more prolonged the response will be more rapid and intense.

Nevertheless, we find ourselves in agreement with those authors who found no deep-seated structural changes, even years after the operation, and have supported the excellent tolerance of the mucosa, claiming further that the small degree of absorption encountered may be related to a possible modification of some enzyme systems to which the active transport of the urinary components through the intestinal mucosa may be attributed.

In conclusion, while recognizing the limits of our investigation, observation of the preparations we have made places us in agreement with those who maintain that the chronic irritant stimulus brought about by the passage of urine produces changes, or rather modifications, in the intestinal mucosa, even though of slight extent. We are inclined to believe that these are the expression of the protective response of the mucosa.

We can in fact distinguish two phases of this phenomenon. The first consists in hypersecretion of the glands, with hyperactivity of the muciparous cells, which can be deduced from the clinical observation that abundant urine secreted immediately after the operation. The second consists in a slight reduction of muciparous activity and of initial oedema, and in more conspicuous parvicellular infiltration, shown on histological examination.

We therefore consider that the signs observed are different factors in a single process of adaptation to which the intestinal mucosa is exposed.

It cannot be excluded, however, that different and more serious modifications may be verified than those encountered by us. We support the hypothesis, already advanced by a number of authors ⁽²⁾, that these modifications are determined by the competition of other factors such as, for example, sepsis, vascularization and nutritional factors inherent in the surgical technique employed.

Finally, the results of our research do not support the thesis that desquamation, atrophy, fibrosis or necrosis are changes that the intestinal mucosa will inevitably suffer in the course of time, whatever the surgical technique adopted.

SUMMARY

The authors examined 4 cases of urinary shunt: 3 by ureterosigmoidostomy and one by cutaneous ureterocolostomy. Biopsies were taken at intervals of 1, 3 and 6 months in order to investigate possible morphological and histological modifications of the intestinal mucosa on contact with urine. Some slight modifications were found, consisting of initial glandular hypersecretion and hyperactivity of the muciparous cells, with moderate oedema of the submucosa and conspicuous parvicellular infiltration. Subsequently a reduction in muciparous activity and stromal oedema was found,

while parvicellular infiltration remained constant. These modifications must be considered as an expression of adaptation to which the intestinal mucosa is slowly exposed.

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Laparoscopy in the diagnosis of acute pelvic pain: clinical appearances and pathognomonic pictures

by

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There is no doubt that some types of acute pelvic pain are difficult to diagnose clinically, and the gynaecologist often runs the risk of making diagnostic and therapeutic errors if he limits himself to the assessment (even an accurate assessment) of abdomino-pelvic findings and the results of conventional tests.

The occurrence of an acute genito-pelvic painful condition – even a pelvic pain in a chronically progressing gynaecological condition which has suddenly become an acute pain – may in fact present with subjective symptoms and localized pain which is often atypical and polymorphic. This occurs particularly frequently in the initial phase, with few objective signs, which may be doubtful or completely absent on clinical examination of the pelvis and genital region, and is often accompanied by unfavourable symptomatological conditions (adiposity, voluntary or involuntary abdominal resistance, etc.). In such cases there can be no substitute for laparoscopy as an examination; it will enable many of these clinical cases to be resolved, and will prevent incorrect treatment of the case, consisting either in waiting for the clinical picture to develop (which might aggravate it), or in surgical intervention in quite ordinary cases (the operation would then be out of proportion to the nature of the pathology). In this connexion the case material of the Obstetric and Gynaecological Clinic at Padua during the past 4 years (1972-75), which we have studied in retrospect, is of interest.

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