been a very noticeable lack of gastric irritation even when 20 grains were given every two hours, and when the ringing in the ears was produced and the dose diminished, this ringing quickly subsided. In some patients the fever fell rapidly before the pain ceased and the pain remained for a day or two after the fever struck normal, although very much ameliorated and so insufficient as not to cause much complaint from the patient. In most patients the pain and the fever disappeared coincidentally, while in others the pain rapidly improved in a few hours, and the fever disappeared a few hours later. In two patients with a marked galloping rhythm in the heart, and with increase in the cardiac murmurs, the belief was justified that there was a beginning myocardial inflammatory process. This cardiac condition subsided rapidly in three days, and the temperature went to normal and did not afterwards rise above, even to 99 or 100. Usually, as is well known, when the heart has become involved there is a rise to 99 or 100 for some time after the other symptoms have disappeared. In another patient with pericarditis, acute endocarditis and myocarditis and with a double rheumatic pleurisy, this form of sodium salicylate was the only form which had any beneficial influence. His pericarditis and pleurisy improved rapidly under these tablets. My supply gave out and again there was a recrudescence in the pleurisy and pericarditis. When I obtained more tablets, these processes rapidly improved under their administration. This improvement was so rapid and marked that it forced on me the impression that it was more than a coincidence.

This form of salicylates seems to enable one to get a large amount of an active salicylate into the circulation at once, in the least toxic and most effective form of the natural salicylate. The process by which this form of salicylate is made is not an economical one, and it is unfortunately doubtful if it could ever be generally commercialized. It is here reported as an exceedingly active and useful form of salicylate, with a maximum of rapidity of absorption; effectiveness after absorption, and a minimum of toxic action.

In using salicylates in rheumatism, one is impressed by the rapidity with which they act when they act well and when the form of salicylate agrees with the patient, so much so that it is my belief that if within forty-eight hours a distinctly beneficial action is not obtained with the form of salicylate which is being used for that patient, we should use some other form. If sodium salicylate with large doses of sodium bicarbonate do not make a distinctly beneficial impression on the rheumatic process by the second day, it should be changed to the oleum betulae, that is, the true oil of birch, and if the patient is resistant to that, it should be changed to salophen or some other form of salicylate.

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HERPES ZOSTER IN CONNECTION WITH KIDNEY LESIONS

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Since Head's fundamental investigations on certain hyperalgetic cutaneous zones and their relation to affections of deep-seated visceral organs, it is generally accepted that pains located in these organs are transmitted to well-defined areas of the integument. The transmission of these pains is supposed to occur through

fibers of the sympathetic nerve originating in the same cord-segments.

While these hyperesthetic zones, up to a short time ago, for want of better knowledge, were considered neurasthenic or hysterical stigmata, Head was the first to establish their anatomic importance as reflex phenomena. He proved conclusively that the location and extension of these hyperesthetic areas as dependent on pains of visceral organs coincided in many instances with the cutaneous eruptive zones of herpes zoster. In other words, by irritation of corresponding segmental fibers of the sympathetic nerve, paresthesias of pain are caused in certain zones of the periphery, which may be followed by the appearance of a typical herpes zoster.

The hyperalgetic peripheral zone of the kidney, according to Head, corresponds to that area of the integument which is innervated by the tenth and eleventh dorsal and the upper lumbar spinal nerves.¹

During the last few months Bittorf, Kanera and Rosenberg,² each in brief succession, reported a case of herpes zoster of the tenth and eleventh dorsal nerves in connection with attacks of kidney colic caused by intermittent hydronephrosis, floating kidney and nephrolithiasis, respectively.

Since the literature does not contain other records of like or similar observations, the two following cases, which occurred in my urologic service of the German Hospital, are reported.

CASE 1.—History.—An attorney, aged 38 years, had suffered from frequent micturition and intermittent attacks of left-sided kidney colic several years prior to the appearance of a large fluctuating hydronephrotic sac on the same side, which about ten years ago was punctured and evacuated through a small lumbar incision. At the same time a small soft calculus, probably the cause of the ureteral obstruction and consecutive hydronephrosis, was removed from the pelvic portion of the left ureter. Gradually the same symptoms, pyuria, pollakiuria and intermittent attacks of colic in the left lumbar region, set in again and became intensified. The patient's condition, of late, grew perceptibly worse, the main symptoms being strangury, frequent attacks of dyspepsia, headache and general malaise.

Examination.—General examination negative; kidneys not palpable; Wassermann negative. Urine cloudy, containing albumin and, microscopically, abundant pus. At two cystoscopic sittings the bladder presents the picture of a chronic cystitis; trigone congested; left ureteral orifice somewhat patulous; both ureters catheterized to pelvis; urine from right kidney is clear and normal, while that of the left side is cloudy and presents, chemically and microscopically, the same findings as the bladder urine. A marked deterioration of renal function (indigo carmin phloridzin, etc.) is found on the left side, while that of the right kidney appears normal. Blood cryoscopy shows 0.573. Radiographic plates negative for calculi-shadows. Renal secretion of left side shows pure culture of *B. coli*. On the basis of these findings, an advanced left-sided pyonephrosis is diagnosed and the patient prepared for nephrectomy on that side.

Two days before the date set for the operation, the patient complained of a slight chill and tenderness over his left thigh radiating toward the knee. On examination a herpetiform eruption was noted on the anterior surface of the left thigh in its center extending about 5 cm. in length and 2.5 cm. in width. Solitary blisters, also in center of anterior surface of thigh, were visible one 4 and one 5 cm. above and one about 10 cm. below the main focus. Temperature slightly elevated, reaching 100 F. but once.

Operation.—Under expectant treatment the zoster readily dried up, so that the contemplated operation could be per-

1. Sahli: Lehrbuch d. klin. Untersuchungsmeth., 1905.
2. Deutsch. med. Wchnschr., 1911, Nos. 7, 14 and 17.

formed nine days after the date first set. By lumbar incision a fluctuating sac of the size of a child's head was exposed; its enucleation was performed with great difficulty on account of many fibrous adhesions, which were particularly dense at the site of the old incision. The ureter was stitched to the lower angle of the wound which was closed by layers. The kidney tissue of the removed specimen, which represented a large sac, appeared to be reduced to a thin layer of fibrous tissue. Microscopic sections (Dr. Ophüls) show on inside of sac layer of vascular granulations and cicatricial tissue which is partly covered with stratified epithelium. In some sections the kidney tissue shows a diffuse fibrosis, dilatation of capsules of glomeruli, tubules wide, filled with desquamated epithelium. In other places all that is left is dense fibrous tissue. Patient made an uneventful recovery.

Comment.—The cutaneous zone of herpes zoster in this case corresponds, according to Head, to the first and second lumbar (or ileo-inguinal, genitocrural and external cutaneous) nerves. The course and extension of the skin lesion comprises an area which is innervated by the crural branch of the genitocrural and the middle cutaneous nerves, which latter nerve has communicating fibers with the crural branch of the former. It is possible that the eruption of herpes was superinduced in this case by the passing of the ureter catheter to the left renal pelvis, as the patient, soon after each cystoscopic sitting, complained of colicky pains in the left lumbar region. In the three cases reported in the German literature, the herpetic eruption zone was located on the back in or near the lumbar region, corresponding to the last two dorsal nerves, while the location of the zoster on the anterior surface of the thigh in my own observation suggests an irritation of the lower or lumbar portion of Head's spinal center for kidney affections.

Since writing the above I find an analogue to the location of the herpetic cutaneous zone in two cases of herpes zoster reported by Rosenbaum,³ in connection with kidney affections. One of the observations concerns a girl of 11 years, who had to undergo nephrectomy on account of a left-sided kidney rupture. Eighteen days after the accident, a zoster appeared over the lumbar region as well as on the lateral and anterior surface of the thigh on the left side, an area which is innervated by the upper roots of the lumbar plexus.

CASE 2.—Past History.—A farmer of 51 was admitted to the hospital in August, 1910, on account of intermittent attacks of right-sided colic radiating from the costal arch downward. The attacks had gradually increased in severity during the last year, occurred about once a month and were invariably connected with vomiting of bile. Nothing of pathologic note could be ascertained by the general examination and clinical observation. On account of the presence of microscopic pus in the urine, a right-sided renal lesion (probably nephrolithiasis) was suspected, a presumption which was not substantiated by either the cystoscopic or radiographic examinations. Both renal secretions were clear and microscopically and functionally normal. Sugar reaction, for instance, was strongly positive on both sides almost simultaneously, fifteen minutes after phloridzin injection. On these findings a right-sided renal lesion was ruled out and a previous gonorrheal infection, involving the prostate, was held responsible for the pus found in the urine. With no other evidence in favor of the probable existence of a cholelithiasis or, possibly, a chronic appendicitis than the symptoms present during the attacks, an exploratory laparotomy was performed at the patient's own request revealing all abdominal viscera normal, save an elongated and tortuous appendix which after its removal showed an obliteration of the lower half of its lumen. The patient's rapid recovery was, about two weeks after the operation, interrupted by a slight chill, rise of temperature

and tenderness over the right chest and back, where an herpetic eruption appeared extending from the external margin of the manubrium sterni to the median line of the back. The zoster, for as such the cutaneous lesion was readily recognized, covered the sixth costal interspace extending to the tenth intervertebral space on the back, corresponding to the tenth dorsal nerve of the spine. The zoster gradually healed within two weeks and the patient returned to his home in the country in excellent condition. A few months later the same attacks of right-sided abdominal colic set in again with greater intensity and more frequently than before. The patient began to suffer from frequent and urgent micturition, independent of the attacks, and the urine which was repeatedly sent for examination was cloudy and contained pus in abundance. The pains during the attacks were now reported to radiate toward the bladder and scrotum. The patient reentered the hospital last May.

Examination.—Cystoscopy now showed the picture of a marked cystitis; right ureteral orifice pouting, emitting turbid fluid; the right renal secretion was cloudy and contained, microscopically, abundant pus and numerous blood-shades, while the urine obtained from the left kidney appeared macroscopically and microscopically normal. Functionally, the right kidney was found to be materially deteriorated as against its left mate, from which normal values were obtained. Blood cryoscopy showed 0.568, x-ray plates were negative for calculi shadows. Pyelography demonstrated the moderately enlarged and irregularly shaped right renal pelvis to be located unusually high between the ninth and eleventh costal interspaces. The injection of collargol solution required for pyelography caused, as the patient stated, the same pain as during the previous attacks of colic.

Operation.—Exposure of the right kidney was extremely difficult on account of its location high under the ribs and owing to many dense perinephritic adhesions. A severe hemorrhage occurred from an aberrant renal blood-vessel imbedded in adhesions and covering the ureter near the lower pole of the kidney. Finally, the organ was sufficiently freed to permit nephrotomy. The cut surfaces of the kidney presented many small cavities containing pus and sandy detritus; the renal pelvis and upper portion of the ureter were widened and filled with pus and fragments of gravel. The kidney was therefore removed, a small tear in the pleura was carefully repaired and the wound closed in the usual manner.

The patient rallied well from the operation and made an uneventful recovery. At the time of his discharge from the hospital he urinated about once every six hours; urine clear; its daily quantity about 1,800 c.c., microscopically normal. The patient's general condition was excellent.

Comment.—Although the location of colicky pains pointed in this case to a kidney lesion, an exact diagnosis could not be made for many months on account of the negative palpatory, cystoscopic and radiographic findings. The appearance of the zoster soon after the first operation was most decidedly superinduced by the bruising of intestinal loops and sympathetic fibers during the exploration of the abdominal cavity. The location of the zoster on the chest and back, somewhat above Head's renal zone and corresponding to the tenth dorsal nerve, finds its explanation in the unusually high position of the diseased kidney. The case proves the correctness of Head's teachings and clearly demonstrates the diagnostic aid which could have been derived, at the time, through the correct interpretation of the herpetic eruption on Head's cutaneous zone for kidney lesions.

CONCLUSIONS

A careful investigation of Head's hyperalgetic cutaneous zones should in future be made in all cases of abdominal colic of otherwise doubtful character.

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3. Rosenbaum: Deutsch. med. Wchnschr., 1911, No. 24.