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SUPERINVOLUTION OF THE UTERUS.

By ALEXANDER RUSSELL SIMPSON, M.D., F.R.S.E.,

PROFESSOR OF MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN IN THE UNIVERSITY OF EDINBURGH, AND PRESIDENT OF THE OBSTETRICAL SOCIETY.

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An atrophic process similar to that which sets in at the menopause may affect the uterus of a woman who is still far short of the ordinary climacteric period. 1. In wasting diseases, such as phthisis, the sexual organs share in the general marasmus, and their withering is evidenced by the cessation of menstruation at varying periods before the fatal issue of the malady. 2. In some cases of paraplegia, as Scanzoni points out, the uterus withers. 3. When the ovaries have been removed, or when their vitality has been impaired by disease, the uterus is found senescent and small. 4. Pelvic inflammations, by causing, as Freund first indicated, condensation of the cellular tissues in the broad ligament, may impair the circulation in the uterine vessels, or, by producing adhesions around the uterus, as described by Jaquet, may compress the organ and lead to its atrophy. 5. Diseased conditions of the uterus itself, such as some subperitoneal fibroids or some cases of endometritis, may lead in different ways to premature atrophy of the organ. In most of these varieties the atrophic process goes on gradually and often slowly—it may be during a series of months or even years.

The variety of undersized uterus to which I invite your attention now, however, is found in most cases to have come about more suddenly, and as a sequela of labour or abortion. I accept the designation of "superinvolution of the uterus," because it seems clearly enough to denote the most striking feature in the group of cases under consideration. The designation "general hypotrophy" suggested by Chiarleoni, while aptly descriptive of the condition in some of the patients, would leave out of account those in which the diminution of the uterus is the only notable physical change. And the designation adopted by Frommel of "puerperal atrophy of the uterus" does not differentiate these pathological cases from the ordinary physiological atrophy that occurs after every labour.

Pathology.

The uterus may be variously affected. The diminution in some cases affects mainly the cervix. When the uterus can be grasped bimanually, the walls of the body and fundus feel of natural thickness and resistance, but the cervix scarce forms any projection into the vaginal roof. In these cases there are usually one or more lacerations to be traced around the os. More rarely—I think in about one in ten of the cases of superinvolution that I have seen—the cervix has remained of full size, while the body of the uterus was quite markedly reduced in size and thin-walled.

In the large proportion of cases the entire organ is withered, and the degree of diminution varies from such a slight shortening that the sound enters nearly to the 2½-inch knob, to such a total disappearance of the organ that the sound only enters for half an inch or less into a pit in the vaginal roof, or seems to pass on unrestricted till the point is felt bare through the abdominal walls.

The case recorded by Dr Whitehead is an interesting illustration of the supreme degree of atrophy. I have seen a patient with just such a shadow of a uterus left; the vaginal roof ended in a narrow *cul-de-sac*, in which a slight depression could be felt by the finger and seen through the speculum. A fine probe could be passed in for about a quarter of an inch, and the bimanual exploration, supplemented by rectal examination with a sound in the bladder, failed to recognise anything like a definite uterus. In three out of twenty-two where I have noted the length, the uterus admitted the sound 1½ inches; in eight, 2 inches; and in seven, 2¼ inches.

In two of my cases the small uterus was retroflexed. More frequently it is found anteflexed.

The atrophic change frequently affects also the ovaries, which can sometimes be felt to be distinctly of small size, or may even escape palpation in women whose thin abdominal walls should have allowed of their easy palpation. The vagina has frequently lost all its rugosities, and is sometimes narrowed towards the laquear, whilst its mucous membrane is the seat of the colpitis common in elderly females.

The patients, in the greater proportion of cases, are thin and tabescent. In a few instances they look unusually stout, like the women who put on flesh in the forties. In one or two the fulness of face and limbs more resembled that of sufferers from myxœdema. The patients are drawn from all classes of the community; and I have met the superinvolution in 22 out of 1300 cases, or a proportion of nearly 1·7 per cent. Frommell met it in 29 out of 3000 cases in the Berlin Polyclinic, or in the proportion of nearly 1 per cent. Professor Müller of Berne thinks Frommell's estimate is low, and I do not doubt that Müller is correct in his suggestion that there are cases of transitory superinvolution in which the uterus, a few

weeks after labour, has got reduced below the normal standard, but afterwards becomes regenerated. At least I have seen one case where a subinvoluted uterus, under the influence of ergot, lessened so that for a time the sound barely entered to the knob, and again enlarged so as to let it enter the full length. Among the cases tabulated by Dr Sinclair of Boston there are twenty-two cases where the uterus is noted as being under $2\frac{1}{2}$ inches, although the observations were all taken within nineteen days after the confinement.

The ages range in Frommel's cases between 19 and 40, with a medium of 29·6. In mine they range from 21 for the youngest to 40, with a medium of 30; one being 40, one 36, one 35, two 33, one 31, three 30, one 29, three 28, one 27, one 26, one 25, one 24, one 23 years of age, and one 21.

With Frommel it occurred in nine after one labour, in two after two, in six after three, in four after four, in four after five, in one after six, in one after seven, in one after eight, and in one after nine labours. In three of my cases it came on subsequently to abortions. One of them had aborted once, one of them twice, and one had had a full-time child eighteen months before she came under observation, and an abortion about six months after her confinement. As regards the number of children, only one of my patients —the woman of 36 with a slightly superinvoluted and retroflexed uterus—had had as many as eight children, one aged 33 had had five, four had had three, three had had two, and eight had had only one child. The period that had elapsed from the date of the last confinement until the patients came under observation varied in the pronounced cases from five months to five years.

Etiology.

In trying to trace out the conditions under which superinvolution of the uterus occurs, we must remark its association with

1. *Wasting Constitutional Diseases.*—I have already referred to the atrophy of the uterus that takes place in patients affected with *pulmonary phthisis*, and it is interesting to observe that a considerable proportion of the cases of superinvolution have occurred in phthisical women. The peculiarity of the relation in this instance, however, consists in this, that whereas the ordinary atrophy of consumptives begins to manifest itself in advanced stages of their disease, superinvolution may set in in a woman who previously to her parturition showed no phthisical symptoms. She comes under observation because of the persistence of her amenorrhœa at a time when as yet no organic change can be discovered on physical examination of the chest, and it may be long subsequently that she succumbs to the constitutional disease. Besides having had repeated occasion to trace the occurrence of superinvolution in connexion with phthisis, I have observed it in a woman who became the subject of marked Addisonian disease; and in another,

where it followed an abortion in a primipara of 40 years of age, the constitution was impaired through the development of a large sarcomatous tumour of the thigh.

2. *Anæmia.*—The most fruitful cause in the production of superinvolution, according to my experience, is the complication of the antecedent labour or abortion with a pronounced hæmorrhage. My attention was first called to the connexion between flooding and superinvolution about five years ago by seeing in my consulting room, in the course of one week, three cases of the disease; and in all the three the patients had suffered from excessive loss of blood. In some cases the hæmorrhage is unavoidable or accidental; more frequently it occurs during the third stage or post-partum. In one of the three patients I have just spoken of lactation was carried out for eleven months, and during all that time the patient had daily losses of blood.

The normal involution of the uterus resulting from the fatty degeneration of the functionless muscular fibres is mainly due, as is well known, to the diminution of the blood supply in the walls of the organ. This helps us to understand how, in patients who have suffered from great loss of blood during labour, the involution of the uterus will be likely to go on rapidly and to excess. In the second group of cases tabulated by Dr A. D. Sinclair in his interesting communications on the measurement of the uterine cavity in childbed, out of 108 women 22 were found to have the uterus measuring less than 2½ inches, and of these 22 four are noted as having suffered from hæmorrhage in connexion with labour. Of the 22 cases which form the basis of this communication, hæmorrhage in a more or less marked degree had complicated the antecedent labour or abortion in ten of the patients.

3. *Nervous Derangement.*—I have not within the last few years had occasion to observe the relations of insanity to superinvolution, but I know that this morbid change in the uterus sometimes affords an illustration of the reciprocal influence of uterine and nervous disorders, and might well have been included among the morbid conditions referred to by Dr V. de Fourcauld in his "Étude sur les troubles du système nerveux central consécutifs aux affections diverses de l'appareil utéro-ovarian" (*Annales de Gynécologie*, xii. and xiii.) For I have formerly met with a few cases of puerperal insanity where the most pronounced local change was found in a uterine superinvolution. In one case the result illustrated De Fourcauld's sixth conclusion, "La guérison des maladies curables de l'utérus entraîne de l'aliénation mentale;" in another, the result confirms conclusion seven, "Si la maladie utérine est incurable, l'aliénation s'aggravera et deviendra démence." Short of mental derangement, however, I have in several cases remarked a marked diminution in the intellectual powers, or a thickness and hesitancy of utterance, or unsteadiness of gait, in patients affected with super-

involution, which gives good ground for supposing that in such patients the nervous system is primarily at fault, and the defect in redevelopment of the uterus is a consequence of the loss of the trophic influence of the nervous apparatus. I have already referred to the uterine atrophy associated with paraplegia, and in this connexion it is well to bear in mind such cases as have been recorded by O'Brien, Gregg, and others.

4. *Over-Lactation.* — The influence of the fulfilment of the mammary function on uterine contraction is well known, and the pernicious influence of too great or too long-protracted suckling has been noted by Chiari, Frommel, and others, as giving a special proclivity to superinvolution. Frommel is disposed to attribute a large proportion of cases of superinvolution to this cause. I have only noted it in 2 out of 22 cases. In one of these patients the system was further weakened by an abscess in the leg. In the other, after she had ceased to suckle her child, a troublesome galactorrhœa remained, for which, as much as for the superinvolutionary amenorrhœa, she sought advice.

5. *Rapid Succession of Labours.*—Kiwisch first, and after him others, have supposed that when a woman has had a series of children with too short intervals between, the system becomes exhausted and uterine atrophy ensues. Mr Whitehead records his case as one of "absence of the uterus after repeated pregnancies;" but it is noteworthy that all her labours were complicated with hæmorrhage, and most of all after the birth of the last child. "On that occasion," says Mr Whitehead, "she was attended by Mr Rothwell, who did not arrive for some hours after the child's birth; the placenta had not come away when he got there, and this he appears to have removed. Hæmorrhage subsequently took place to such an extent that he found it necessary to remain with her five or six hours, during the greater part of which she was delirious." This case is for me, therefore, a typical illustration of a superinvolution from anæmia. I have not met with a case where I could connect superinvolution with a rapid succession of labours. Under such conditions subinvolution is very common.

6. *Local Inflammations.*—Now and again the diminution in the size of the uterus follows on some injury inflicted during the labour, or inflammatory mischief set up during the puerperium. Rokitansky has signalized the shrinking of the cervix when it has been lacerated. Kiwisch has spoken of the destructive results of diphtheritic endometritis. A cellulitis atrophicans may arise after a confinement, but probably the local inflammations most likely to be followed by superinvolution are those ovarian inflammations which are attended by follicular degeneration, and lead to destruction of the functional activity of the ovaries themselves. When the vitality of the ovaries is thus impaired, sooner or later the uterus shares these conditions.

There may possibly be other causes. I could conceive, for

example, that the influence of ergot unduly administered might tend to superinvolution. But all the cases I have met with can be ranged under one or other of the causal groups which I have attempted to describe.

Symptoms and Diagnosis.

The symptom which in most women attract their attention to this disease is amenorrhœa. In some of them there is no return of menstrual flow subsequently to their parturition; in others there is a menstrual discharge, but very slight in amount and short in duration, or recurring at prolonged intervals. Sometimes sterility prompts them to seek for advice; and, as Chiarleoni points out, they will sometimes complain of or confess to anaphrodisia.

The diagnosis is made by the usual gynecological investigation, and especially by the bimanual examination — not merely abdomino-vaginal, but these combined with rectal and sometimes vaginal exploration. The sound is eminently serviceable, but must be used with caution, because of the thinness of the uterine parietes. In the superinvoluted uterus the walls are not only very thin; they are unusually soft and lacerable, so that the sound is easily pushed through. The volsella is often helpful for pulling down the uterus into the vaginal canal while the finger in the rectum reaches up the back of the organ and appreciates more fully its proportions.

Treatment.

1. *General.*—In treating a patient who is the subject of this affection we must have regard, first of all, to her constitutional condition and the circumstances under which the superinvolution has been produced. Any drain on the system must be checked; any constitutional weakness must be combated. The anæmic female must be treated with hæmatinics; and those with mental and nervous derangements with appropriate remedies and remedial measures. If there remain any trace of local inflammatory action, this must be met by hot vaginal douches and counter-irritants, while the patient is made to use tonics of various kinds internally.

2. *Local.*—The uterus may be stimulated in a few cases to redevelopment. Such an attempt is useless where the patient, *e.g.*, is phthisical or the ovaries gone. But in some the occasional introduction of a sound or of a dilating bougie has been found useful in re-exciting the menstrual flow when the patient has taken iron and other emmenagogues for a time, with the effect, perhaps, of improving the general condition but not of procuring the uterine discharge. In yet others the wearing of an intrauterine stem promotes the development of the uterus. In several instances I have witnessed the growth of a superinvoluted uterus whilst the patient was wearing

the stem-pessary made partly of zinc and partly of copper. In some it brought about the restoration of the menstrual flow; and in one patient, in whom the superinvoluted uterus was little over 2 inches, the wearing of the galvanic pessary was followed by such a regeneration of the organ that its functional activity was fully restored, and I had the satisfaction of attending her at the birth of a living child. I append in a tabular form the details of my own cases and of those of other writers.

		Age.	No. of Children.	Time since last Confinement.		Size of Uterus.	Cause.	Complication.
				Years.	Months.			
Private Cases.	I.	31	2	6	0	1¼	Hæmorrhage.	
	II.	36	8	0	3	2¼	Do.	Retroflexion.
	III.	33	1	6	0	2¼	Daily loss during 11 months' lactation.	Phthisis.
	IV.	27	3	0	5	2	?	Phthisis, Senile Colpitis.
	V.	30	1	0	6	1½	Suppuration of Breasts, 3rd Week.	Phthisis advanced.
	VI.	28	1	6	0	2¼	Superlactation.	Abscess in leg.
	VII.	25	1	1	5	2	Lactation persisting, Hæmorrhage.	
	VIII.	30	1	1 Abortion 6 months after.	6	2		Cervical Laceration.
	IX.	33	5	1	4	2	Hæmorrhage.	
	Note.—This patient had been married seven years, and had five children in six years, flooding with the last. She had also slow speech, staggering gait, and general drowsiness.							
	X.	28	3	3	0	¼	Hæmorrhage.	
	XI.	40	1 Abortion at 4th month.	3	6	2	Hæmorrhage.	Sarcoma of Thigh.
	XII.	30	1	5	0	2	?	Retroflexion.
	XIII.	29	1	0	8	2	?	
	XIV.	35	3	5	0	2¼		
	Note.—No. XIV. had nursed her last child fifteen months. Her mother and aunts ceased to menstruate short of 40.							
Ward Journal.	XV.	28	2	2	7	2¼	Superlactation.	
	XVI.	26	2	?		1¾	?	Lacerated Cervix.
	XVII.	24	3	2	0	2	Hæmorrhage and Lactation.	
	XVIII.	21	1	0	2	2¼	Hæmorrhage.	Phlegmasia Cruris.
	XIX.	23	2 abortions.	1	6	2¼	Do.	Anteflexion.
	XX.							Addison's Disease.
	XXI. XXII.	Two cases in Out-Patient Book, details not noted.						
	22 in 1300 cases = 1·7 per cent. nearly.							
Chiari	XXIII.	36	1	8	0	2	Lactation.	
	XXIV.	28	1	1	2	2½		Cervix atrophied.
Chiarleoni	XXV.	26	3	1	0	?		General Atrophy, Nervous Disease.
	XXVI.	28	1	4	0	2		
Jaquet	XXVII.	25	2	4	0	½	Suppuration in Breasts.	Parametritis, Diphtheria.
Whitehead	XXVIII.	30	1	1	6	½		
	XXIX.	39	4	11	0	Absent	Hæmorrhage.	Do.
Frommel also mentions 29 cases; but as he neither gives the size of the uterus nor the cause, they are not given in above table.								

The subject of superinvolution of the uterus will be found discussed in the following systematic works and papers :—

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