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PREGNANCY AND ALLERGIC DISEASES

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Until recently the general view of the question asthma and pregnancy has been that the latter did not exert any aggravating influence on the patient's asthma but, on the contrary, in a number of cases brought about an improvement or even freedom from symptoms (6, 8, 16). It has therefore been universally accepted that, generally, asthma affords no indication for induced abortion (Gay (9)).

During recent years a few papers have been published which suggest that this question needs reconsideration. Zizine (17) thus examined the influence of pregnancy in 32 asthmatics, and found improvement or freedom from symptoms in 9, unchanged asthma in 2, and aggravation in 13 patients. In 8 cases the asthmatic disorder set on "in spite of the pregnancy". Cooke (2) states that the number of cases aggravating is the same as that of improved cases in the course of pregnancy.

De Gennes and Mahoudeau (10) state that the asthma of pregnancy appears in the second third of gestation, and stress that this coincides with a rapid increase in the excretion of oestrogen and progesterone. Therefore they consider that the asthma of pregnancy during the last months of gestation is not due to purely mechanical factors but to hormonal influence—though it cannot be said at present which hormonal functions are to be considered causative. Green (11) is of the same opinion, and Turiaf and Zizine (15) stated in 1950 that a

severe asthma of pregnancy can be successfully treated with a brief "desensitization" with lutein.

An interesting report is one of false pregnancy in an asthmatic (menostasis for over 3 months) in whom the asthma disappeared entirely whilst at the same time a number of changes of hormonal causation occurred in the endometrial and vaginal mucous membranes and in the excretion of hormones just as in true pregnancy (Bonafos, Perret-Borrie and Assus (1)). These authors consider that the improvement taking place in the course of pregnancy in asthmatics is of hormonal determination, and that the same improvement will occur in cases of false pregnancy when the same hormonal influences as are seen in true pregnancy occur.

The eosinophilic cells of the blood are influenced both by ovulation and pregnancy (4), the result being an eosinopenia. In the course of parturition there is often a complete absence of circulating eosinophils, and the same may be seen in eclampsia.

It has thus been realized during recent years that pregnancy does not always cause an improvement in asthmatics, and our immediate experiences in the Allergy Consultation of the Medical Out-Patients' Department, University of Copenhagen, tend in the same direction. The question is then: What should be our attitude to the numerous questions about indication for induced abortion owing to asthma? Is it justifiable still to maintain that, generally, asthma does not afford an indication? If we accept that asthma may indicate induced abortion to a higher degree than previously, the question as to the cases in which induced abortion should be undertaken and those which can carry through the pregnancy must also be thoroughly considered. Moreover it was desirable to find out how another allergic disease, namely vasomotor rhinitis, behaves during pregnancy, as we were under the impression that it responded in the same manner as asthma.

In order to elucidate these questions the Allergy Consultation undertook a catamnestic examination of 106 patients, chosen from the department's case records of patients with

allergic diseases of the years 1945-50, both inclusive. The series of cases only comprises married women suffering from bronchial asthma and/or vasomotor rhinitis, as these diseases are of a *relatively* constant nature, whereas other medico-allergic diseases, such as urticaria and Quincke's oedema, are of such a variable occurrence that a period of 9 months is insufficient for a clinical estimate to be made. None of the patients have been subjected to a specific desensitization during pregnancy.

Of the 106 patients 3 were resident abroad, 6 could not be found from the address, and one refused to give any information; this leaves 96 patients who supplied adequate information, i.e. a follow-up percentage of 91.

It appeared, however, that 22 of the patients had to be left out of consideration, as their allergic disease had only manifested itself outside periods of pregnancy; either because the disease had not set on until after the last pregnancy, or because it was seasonal. Another 2 patients have to be left out, as they both died of asthma.

Of the remaining 72 patients:

- 49 had bronchial asthma,
- 11 had vasomotor rhinitis, and
- 12 had bronchial asthma and vasomotor rhinitis.

Table I shows how the allergic disease behaved in the course of pregnancy in these 72 patients. It appears that 39 per cent. improved, 19 per cent. remained unchanged, and 42 per cent. aggravated in the course of pregnancy. Further it appears that, broadly speaking, asthma and vasomotor rhinitis display the same fluctuations in the course of pregnancy.

It was then attempted to fix the time when the change of the disease caused by pregnancy occurred. This appears from Table II which shows that among the 28 patients who improved during pregnancy the improvement occurred in 23 in the course of the first 3 months of pregnancy. 19 out of these 23 patients became entirely free from symptoms before the

TABLE I

Examination of the condition during pregnancy in 72 patients with allergic diseases.

	Number of patients	Condition during pregnancy		
		Improved	Unchanged	Aggravated
Asthma only	49	19 (39 %)	9 (18 %)	21 (43 %)
Asthma combined with				
vasomotor rhinitis	12	6 (50 %)	0 (0 %)	6 (50 %)
Asthma, total	61	25 (41 %)	9 (15 %)	27 (44 %)
Vasomotor rhinitis only ...	11	3 (27 %)	5 (46 %)	3 (27 %)
Vasomotor rhinitis combined				
with asthma	12	6 (50 %)	0 (0 %)	6 (50 %)
Vasomotor rhinitis, total ...	23	9 (39 %)	5 (22 %)	9 (39 %)
Total of patients examined	72	28 (39 %)	14 (19 %)	30 (42 %)

end of the third month. The remaining 5 patients were unable to state the exact time when the improvement occurred, they could say only that it did not set on during the last few months of pregnancy.

TABLE II

Time of onset of the change in the allergic condition during pregnancy.

Patients with bronchial asthma

	Improvement or aggravation		
	During the first few months (1st - 4th)	Unknown when	During the last months (5th - 9th)
Improvement during pregnancy ...	20	5	0
Aggravation during pregnancy	12	2	13

Patients with vasomotor rhinitis

	During the first few months (1st - 4th)	Unknown when	During the last months (5th - 9th)
Improvement during pregnancy ...	9	0	0
Aggravation during pregnancy	3	2	4

The time when aggravation occurred during pregnancy is, on the other hand, evenly distributed throughout the period. 30 patients stated that their allergic condition aggravated in the course of pregnancy, during the first half of the period in 12 cases, and during the latter half in 14, while 4 patients were unable to say anything about the time of onset. The table showing this group includes 6 patients whose asthma appeared for the first time during pregnancy.

TABLE III
Allergic condition after parturition in patients who improved during pregnancy.

	Lasting improvement (period of obs. up to 3 years)	Aggravation immediately after parturition	Aggravation occurred later, up to 1 year after parturition	Unable to to give any details	Total
Bronchial asthma	3	13	3	6	25
Vasomotor rhinitis	0	6	0	3	9

Tables III and IV show conditions after pregnancy. As already mentioned, 28 patients improved in the course of the period. Table III shows that a prolonged improvement was obtained in only 3, or about 10 per cent., of these patients, and that 19 of the patients had a recurrence immediately after parturition. This may perhaps suggest that the improvement occurring in the course of pregnancy is of hormonal determination, and is therefore wholly or partly discontinued immediately after parturition.

The condition improved after parturition in 12 out of 30 patients whose allergy was accentuated in the course of pregnancy. An additional aggravation was observed in 5 patients, in 4 the condition remained unchanged after pregnancy, and 9 were unable to give any details.

It was then examined whether the laboratory examinations generally employed in allergics (eosinophilia, vital capacity, cutaneous tests) showed different results in patients who im-

TABLE IV

Allergic condition after parturition in patients who aggravated during pregnancy.

	Un- changed	Further aggrava- tion after parturition	Improve- ment im- mediately after par- turition	Improve- ment later (up to 1 year after par- turition)	Unable to give any details	Total
Bronchial						
asthma . . .	4	5	3	6	9	27
Vasomotor						
rhinitis . . .	0	1	2	4	2	9

TABLE V

Eosinophilia, vital capacity and average size of cutaneous reactions in the groups: Improved, unchanged, aggravated during pregnancy.

Patients with bronchial asthma

Condition during pregnancy	Number of patients	Eosino- philic cells ¹	Vital capacity ²	Cutaneous tests ³
Improved	25	535	2.6	11.5
Unchanged	9	570	2.1	14.5
Aggravated	27	380	2.3	13.0

Patients with vasomotor rhinitis

Condition during pregnancy	Number of patients	Eosino- philic cells	Vital capacity	Cutaneous tests
Improved	9	295	—	14.5
Unchanged	5	163	—	12.5
Aggravated	9	362	—	11.5

¹ Average number of eosinophilic cells per cubic millimetre of blood. Standard deviation ± 115 .

² Average vital capacity in litres. Standard deviation ± 0.25 .

³ Average size of the most vigorous cutaneous reaction measured in mm. Standard deviation ± 2.1 . The cutaneous reactions were all made as intra-dermal tests.

proved, aggravated or remained uninfluenced in the course of pregnancy. Table V shows that no difference could be demonstrated in this respect between the different groups of patients.

The next question which it was attempted to elucidate was how the two allergic diseases respond in the course of *several* pregnancies. The allergic condition might be imagined to fluctuate capriciously, improving during one pregnancy and aggravating during the next, or conversely, or to respond alike during each pregnancy in the same woman. Our series includes a number of multiparae (24) and, as the result of the anamnestic examination is unambiguous, this question has been answered beyond doubt.

Of the patients who improved in the course of pregnancy

10 had had 2 pregnancies,
2 had had 3 pregnancies, and
1 had had 4 pregnancies.

Of the patients whose condition aggravated in the course of pregnancy

4 had had 2 pregnancies,
5 had had 3 pregnancies,
1 had had 5 pregnancies, and
1 had had 6 pregnancies.

The result of the anamnestic examination is unambiguous, as each multipara stated that she responded in exactly the same manner during all her pregnancies. This means that the patient whose allergic disease aggravated during pregnancy can be sure of another aggravation during her next pregnancy, and that those who improved can expect a period of rest in case of another pregnancy.

DISCUSSION

The results arrived at show that the current view of pregnancy giving rise to an interval which is free from asthma

is not of universal validity. In many cases, about 40 per cent., pregnancy can produce a distinct improvement of the allergic condition, the patient even becoming free from symptoms, but it causes an aggravation in at least the same number of patients. The improvement will almost always cease after parturition, whereas the aggravation will often persist.

The improvement of the allergic condition most frequently occurs in the first few months of pregnancy, whereas the aggravation apparently sets on more irregularly at some time or other in the course of pregnancy.

In addition, the series shows that the response of the patients is alike in the first and the subsequent pregnancies. No patient who improved during one pregnancy experienced an aggravation during a subsequent one, and, conversely, there were no cases of aggravation during one pregnancy and improvement during another.

The constant appearance of these changes in the disease in the course of pregnancy permits a revaluation of the indications for induced abortion on an allergic basis. *If it has been definitely ascertained that a patient suffering from asthma has had severe attacks of the disease during one or several previous pregnancies, and especially if it is known to persist, or perhaps aggravate, after parturition and to become difficult to regulate, it must be justifiable to recommend the patient for induced abortion owing to asthma.*

When the indications for induced abortion are extended in this manner it must be stressed at the same time that the first pregnancy hardly ever will afford indication for this interference, as she will have equal chances of improvement or aggravation during pregnancy. Only if the asthma takes a particularly serious course during pregnancy, induced abortion on allergological indication may be considered in such a case.

There is one question which could not be settled by the present series: Were the pregnancies wanted or not? We would not ask the patients this question, for at the time of the examination when the patients had their children and presum-

ably were happy to have them this might give misleading results and might perhaps also hurt the patients.

The patients dealt with in the present series have not been subjected to specific desensitization or other specific treatment, as patients who had been given any form of special therapy would of course not be suitable for an estimate of the spontaneous fluctuations of the allergic diseases in the course of pregnancy. It has been previously stressed, especially by American authors (7, 14), that specific desensitization calls for circumspection, or a direct warning against this form of treatment has been given with reference to the risk of abortion. It may therefore be pointed out that specific desensitization is the standard treatment in the Allergy Consultation of the University Hospital, Copenhagen, also during pregnancy, and that we have never seen abortion as the result of this treatment. Chester (3) has also carried through specific desensitization in pregnant patients with asthma, urticaria and vasomotor rhinitis without any injurious side-effects; the same treatment has been used by Rockwell (12). It is even said that there is a risk of abortion in cases of asthma and urticaria and, therefore, specific desensitization is indicated, also during pregnancy (5, 13).

SUMMARY

(1) The allergic condition (asthma and/or vasomotor rhinitis) has been examined catamnesticly in 72 pregnant patients. 39 per cent. improved, 19 per cent. remained unchanged, and 42 per cent. aggravated distinctly in the course of pregnancy.

(2) The patients who improved in the course of pregnancy generally experienced the improvement in the first few months of pregnancy, whereas in the patients who aggravated during this period the change might occur at any time.

(3) When improvement occurred in the course of pregnancy it generally ceased immediately after parturition; this

suggests that the improvement is caused by yet unknown, possibly hormonal, factors during pregnancy.

(4) Twenty-four patients were multiparae. They all responded alike in all pregnancies. No patient experienced aggravation during one pregnancy and improvement during a subsequent one—or conversely.

(5) It is stressed that it should be possible to undertake induced abortion on an allergological indication, namely if it has been definitely ascertained that the asthma aggravated during a previous pregnancy, especially if the aggravation persisted and possibly increased after parturition.

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