

ON REVERSIBLE PULMONARY CREPITATION IN CARDIAC FAILURE.

BY ALEXANDER MORISON, M.D. EDIN.,
F.R.C.P. LOND. & EDIN.,
SENIOR PHYSICIAN TO THE GREAT NORTHERN CENTRAL HOSPITAL.

I HAVE at present under my care in the Great Northern Central Hospital a patient exhibiting in a marked degree a phase of pulmonary congestion in association with cardiac failure which I have from time to time observed, and which has no doubt been observed by many others, but to which special attention, so far as I know, has not been drawn. It is, however, a striking clinical phenomenon and deserves, I think, to be rescued from the general conception of passive pulmonary congestion, as it has, I believe, a certain significance of its own. A considerable time has elapsed since I contributed an article to the original *Practitioner* (Vols. XLIX. and L.) on Passive Congestion of the Lungs from Heart Failure, and while subsequent observation has confirmed the views I expressed then, I had not at that time noted the special feature in such congestion to which I propose very shortly to refer now.

I have used the adjective "reversible" in this note rather than hypostatic, static, or postural, to emphasise the fact that the well-marked crepitation denoting pulmonary congestion in the most dependent part is abolished, usually altogether and always almost, by a single rotation of the patient on his own axis in bed, and in the short space of time which that movement occupies, a fact no doubt explicable by the nature and degree of the congestion in question. It is always, so far as my experience goes, denotative of a grave degree of cardiac failure when reversible from one lung to the other, but may nevertheless disappear and leave the patient in a position to resume his normal activity. While exhibiting the sign, however, he is compulsorily bedridden.

It may arise in one in whom the sphygmomanometer records a high pressure or in one in whom it registers a low pressure. It is not the state of the arteries, but of the heart which accounts for it, and we know that that instrument does not always indicate the power of the latter. The sign denotes enfeebled ventricular action. It may be associated with an apical bruit of mitral incompetency, which disappears on convalescence; or no such bruit may be present. As it so happens, I have noted it more frequently in the absence than in the presence of organic valvular disease. The cardiac rhythm may be quite regular—has been so—in the cases in which I have observed it, and its rate only moderately, or at times considerably, increased. I append a sphygmogram

expectoration. Occasionally the sputum is a little blood-stained.

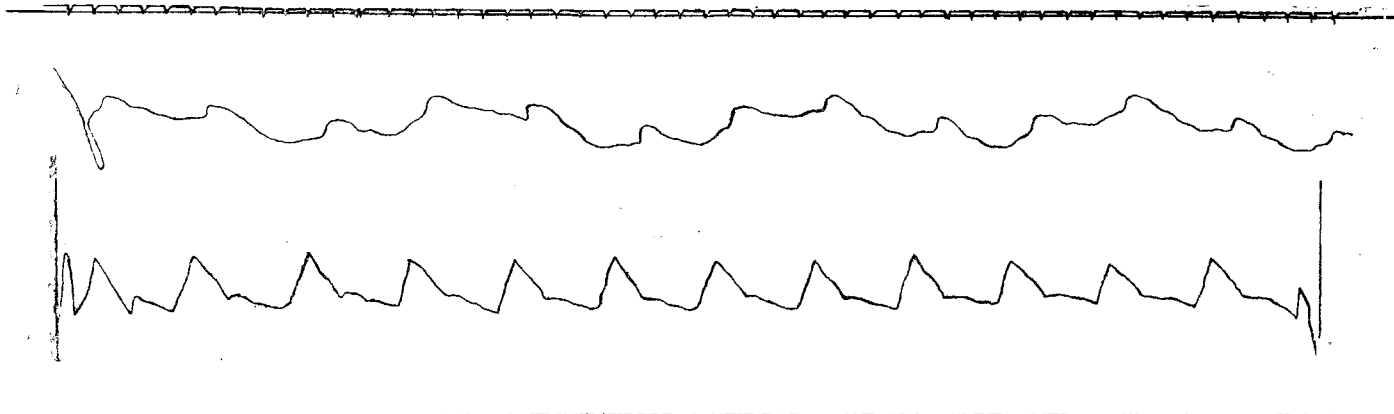
I have always met with it in middle age, later middle age, or early old age—the patient under my care at present is 67. It may quite possibly occur in younger people. As it so happens, all my patients have been men with some impairment of thoracic elasticity. The disappearance of the sign follows the re-establishment of adequate ventricular action under the employment of long approved and in no way mysterious cardiac care and cardiac stimulants.

What, then, is the precise nature of the local condition which so rapidly appears and disappears? One can frequently arrive at what anything is by considering what it is not. It certainly is not a matter of better pulmonary inflation by the increased compass of respiration on the free side, for the ultimate disappearance of the sign only occurs when adequate ventricular action is restored. The interstitial pulmonary texture is not persistently involved, for there may be no diminution of percussion note, and the crepitation disappears on postural reversal so rapidly. As, moreover, there is usually little bronchial hypersecretion the crepitation cannot be due to active stimulation of the bronchial mucous follicles. The condition, therefore, is a passive venous congestion, exuding serum, and occasionally with this an admixture of the coloured elements of the blood. It is, in short, a minor degree of acute cedema.

In the next place, where precisely is the congestion? The signs are those of a crepitation varying in size from the small hair-crepitus to crepitation of "medium" but not "large" size. Associated with the larger crepitation there may be a moderate degree of transient inspiratory sibilus. The condition, therefore, is in the alveoli and smaller bronchi. We know that the venous system arising in the walls of the alveoli is that of the pulmonary veins, and that arising in the bronchi that of the bronchial veins. Anatomists also inform us that part of the blood carried by the bronchial arteries is returned by the pulmonary veins, and that the latter are valveless. The overflow, then, is in the distal portion of the pulmonary and bronchial venous system.

Again, why and how does the rapid reversal of the sign occur? The instantaneous nature of the change precludes the possibility of any increase of auriculo-ventricular aspirative power in the interval. The change, therefore, is the direct result of postural alteration, the elevated organ discharging its overflow just as the elevation of a varicose leg reduces varicosity. The rapidity with which the sign is produced on the dependent side is probably favoured by the valveless nature of the pulmonary venous system.

Finally, what is its precise clinical significance? It apparently means that the conditions producing it are not of long standing, that local changes in pulmonary texture are



Radial and jugulo-carotid tracing.

from the case now in hospital in whom the sphygmomanometric reading was low, the pulse slightly accelerated but regular, the respiratory movement rather exaggerated, and the venous incidents ill-marked in the phlebogram.

There may be some anasarca or cedema of the legs, but this may be absent. The urine usually contains albumin, variable in amount, but there need be no evidence of persistent renal disease. Usually there is not. Considerable dyspnoea or some "shortness of breath" is always complained of by those evincing the phenomenon, but there need be no persistent alteration of lung. There is usually some cough of an irritative character, but this may not be urgent, and with the sign persistent and well marked there may be little

not inveterate, but that the degree of cardiac failure is considerable.

Since sending the manuscript of this note to THE LANCET, the patient from whom the above tracings were taken has died. The necropsy revealed a much dilated and fattily degenerated heart, considerable bullous emphysema of the upper portions and anterior edges of the lungs, and great dilatation both of the pulmonary artery above the valves and of the right auriculo-ventricular orifice. The percussion note over the left lung generally became markedly dull as the case deteriorated and especially over the left anterior apex. At no time was any ventriculo-auricular bruit detected, but for some time before death a diastolic murmur,

increasing in audibility, was heard along the left edge of the sternum, having a roughness which suggested extra-cardial friction.

Upper Berkeley-street, W.

INFANT MORTALITY.¹

BY W. E. HEILBORN, M.B., B.C. CANTAB.,

ASSISTANT PHYSICIAN TO THE BRADFORD CHILDREN'S HOSPITAL;
ANÆSTHETIST TO THE BRADFORD ROYAL INFIRMARY.

INFANTILE mortality has been the subject of much investigation recently, and many factors have been blamed for the high death-rate which prevails in many of our cities. It has roused the attention not only of the medical profession but also of laymen, and much work has been done, and much time and money have been spent in trying to deal with it. It will be my endeavour to put the facts as shortly as possible, and to try to come to some conclusion as to the methods we ought to employ to wipe out this blot on our civilisation.

For the purposes of this paper I am limiting the term "infantile mortality" and intend it to refer only to the deaths of infants (up to the age of one year) *born healthy*, and that death is not due to any special cause or disease—e.g., the infectious fevers, pneumonia, meningitis, &c. In short, it refers to infants who could and should have grown up healthy and have never been given a chance to live. The primary cause of death in these cases is neglect or ignorance, or both, on the part of the parents. The former is either wilful or due to circumstances; the latter is universal.

Wilful neglect and ignorance can be, and ought to be, dealt with, but neglect due to circumstances is the most important and most difficult problem. Various societies, such as the Guild of Help, &c., are trying to deal with this latter question, but it is doubtful whether their efforts are in the right direction. The tendency of the day is *not* to teach the people that they have certain responsibilities towards their children, but to take that responsibility away from them. A great factor, too, is the increase of woman labour. If a married woman has to work she cannot look after her children properly and is certainly no fit person to feed and attend to an infant. This leads to the question of putting infants out to nurse—in my opinion an almost criminal procedure. My experience at the Children's Hospital teaches me that a large proportion of these wasting babies are those who have been "put out to nurse."

The other primary cause of death—i.e., ignorance—can only be described as amazing. This refers chiefly to feeding, and no one who had not himself heard the statements made by mothers would believe that they could display such ignorance as to the requirements of an infant. The prevailing idea seems to be that anything *but* breast milk is good enough to feed an infant on, and for this we have to thank the advertisements of patent foods. Even our own profession, I regret to say, has been led away. So many mothers bring their children to me with the story that their medical man advised them to try some patent food because their own milk was not agreeing with the baby that I cannot believe they are all lying. Just as we are allowing the art of prescribing to pass into the hands of the manufacturing chemists, so we have been allowing the management of infant feeding to pass into the hands of the patent food vendors, but I have great hopes that in the latter case, at any rate, their reign is at an end. During the last year I have noticed a considerable increase in the number of cases fed on milk and barley-water, and for this I am sure we have to thank the lady inspectors.

Many years ago there was an outcry because it became fashionable for mothers not to nurse their babies but to feed them artificially, and to this was ascribed the great increase of infantile mortality; but at that time the fashion was chiefly amongst the well-to-do, amongst whom the infant mortality was comparatively very low, and it is now a well-established fact that infants can be reared artificially with a very low mortality if only proper care and attention be given to them. The truth is, that amongst the poor many

women nowadays have not sufficient milk to nurse their babies, and when we come to consider the conditions under which they live, the scanty nourishment they themselves get, and the amount of work they do, this is not surprising.

I will now briefly review the various methods which have been employed to remedy this state of affairs. To begin with, we tried milk modified in every conceivable way: diluted, with various kinds of fluids and in varying quantities, undiluted, boiled, sterilised, Pasteurised, "humanised," peptonised, goat's milk, buttermilk, whey, &c.; and we have even gone so far as to put various drugs into the milk, such as sodium citrate. It is curious and interesting to note how different observers in different countries have obtained equally good results with any and every variety of milk. This is very important, as pointing to the fact that it cannot be the quality of the food *alone* which causes the great infant mortality, and that a great deal depends on the proper care and attention bestowed on the child and on the feeding of it, since it is, with reason, to be assumed that each observer, whilst trying his own particular kind of food, has taken care that the child should have every possible attention in every direction. Then we were flooded with the patent foods which I need not mention by name; and then came the modification of milk on scientific principles from America, which consists in prescribing the milk, or, in other words, in ordering the different ingredients to be made up for each infant exactly as one orders a medicine. And, lastly, various societies, such as the Guild of Help and the "Babies Welcome," have taken the matter up and are trying to teach the people how to look after and to feed their infants. The point I wish to emphasize is that all these methods are bad, inasmuch as they are beginning at the wrong end. Instead of teaching the mothers how they can best prepare themselves to nourish their own children we are teaching them to avoid nourishing them by making it *apparently* so easy for them to feed their infants artificially, and having taught them to do this we are supplying them with dirty milk which has to be cleansed and prepared at great expense, instead of turning our attention to the dairies, and obtaining a pure, clean milk from its very source.

What we have to do now is to set about undoing all the harm that has been done and to commence at the very beginning again. I am quite aware of the difficulties of the task to be undertaken, and I know that it will take many years before we can show any marked results. It will cost a huge sum both to the State and to the municipality, but in the end we shall be the gainers. I would suggest that the work should be undertaken somewhat on the following lines:—

1. Institute a thorough system of education for those about to become mothers. This should consist in teaching them how to prepare themselves for motherhood and in instructing them in the art of cleanliness and in the general management and feeding of infants. They should be taught that the proper nourishment for an infant is the mother's milk; if that fails, that the only substitute is pure fresh cow's milk, with or without the addition of a certain quantity of water. That infants do not require feeding every hour during the night or every few minutes during the day, or whenever they cry, and that the regular weighing of the infant is the sole guide as to whether it is thriving or not.

2. To pass a law preventing all women about to become mothers from working in a factory or mill, and this should hold good during the whole of their child-bearing period.

3. To institute a system of dairies through which the public can be supplied with pure, fresh milk.

4. That every physician who delivers a child should look upon that child as his patient, and that it should be under his immediate supervision during the whole of its infancy.

5. That the sale of patent infant foods to the public be made illegal. (If physicians would only impress upon the public the harmfulness of these foods this would be unnecessary.)

6. To obtain an efficient army of competent and trained lady inspectors who shall visit every infant each week and immediately report to the physician if the infant does not seem to be thriving.

7. To make it illegal to insure an infant's life.

Meanwhile, we must find means to deal with the wasting babies which are the result of our hopelessly inadequate system. At present we are sadly behind the times in this respect, and those who have been abroad and have seen the

¹ A paper read before the Bradford Medico-Chirurgical Society on March 21st, 1911.