On the treatment of croup : a letter to Prof. A Jacob, M.D. / by Fordyce Barker, M.D.

ON THE

TREATMENT OF CROUP:*

A LETTER TO PROF. A. JACOBI, M.D.

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Dear Doctor Jacobi: I so heartily accord with the high commendations which have been expressed by the profession, both in this country and in Europe, as to the value of your paper on the "Pathology and Treatment of Croup," published in the American Journal of Obstetrics for May, 1868, that I should feel great hesitation in presenting my own views on this subject, if I had not received your note asking for them. The disease is one which statistics show to be fatal in so large a percentage of the cases, that every one familiar with the literature of the subject would feel great diffidence in laying claim to any marked success in the medical treatment of croup, as he must know that such a claim would challenge question either as to the honesty or the competency as to diagnosis of the writer.

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When I read anything new on the treatment of croup, I first seek to inform myself as to what the author means by croup; and as others may have the same desire, I will first define my own use of the term. The popular use of the term includes several distinct diseases, as œdema of the glottis, laryngismus stridulus (or spasm of the glottis), catarrhal laryngitis (or false croup as it has been called), pseudo-membranous laryngitis, and the croup of diphtheria. No well-informed physician ever includes the first two of these affections in the term croup, but the term is in common usage as applied to the last three.

Catarrhal laryngitis is a very common disease, every physician in active practice meeting with it every year, more or less frequently. It sometimes precedes capillary bronchitis or pneumonia (and in my opinion the pseudo-membranous laryngitis), or some of the exanthemata, and it may terminate fatally, even when it does not occur as a precursor of the above-mentioned diseases. It has been called "false croup" because no false membrane has been formed in the larynx or trachea, while the most marked and characteristic symptoms are very similar to those occurring in the inflammation of the larynx and trachea, which results in the exudation of a false membrane, or in a fibrino-purulent secretion. Many authors have given the differential diagnosis between these two forms of laryngo-tracheitis with a minute distinctness that I have never been able to recognize practically. A careful study of several recent authors on "Diseases of Children" on this point, has convinced me that the differential diagnosis, as given by them, be-

tween false and true croup, or catarrhal and pseudo-membranous laryngitis, will not stand analysis in practice. Some have gone so far as to assert that there is no true croup without a false membrane; but, at the present day, I think the best pathologists all admit that we may have true croup without the plastic exudation—that is, croup with fibrino-purulent exudation. Now, to my mind, the difference between false and true croup is essentially a question of intensity and extent of tissue involved, and there is no other radical difference between them. I should define their false croup, or "spasmodic laryngitis," or "catarrhal laryngitis," as a superficial inflammation of the mucous membrane of the larynx and trachea, while true croup or pseudo-membranous laryngitis is a more intense inflammation which profoundly affects the nutrition, secretion, and texture of the same organs. I therefore think the terms false and true croup should be abandoned, as they convey a false impression. They imply a difference as to the nature and seat of diseases which are identical, only differing as to intensity and extent of tissue involved. I can add nothing to your description of the very acute form of catarrhal laryngitis, which disappears in a few hours after the administration of proper remedies, such as emetics, the application of hot sponges over the neck and throat, and the use of anodynes. But while I do not dissent from, I am not quite prepared to give my unqualified assent to, your views as to the neuropathic state which causes the peculiar kind of cough and suffocative dyspnœa, which has led these attacks to be called "spasmodic laryngitis." I have read your argu-

ments and those of Schlautmann with great interest in explaining the symptoms which have been generally ascribed to spasm, as in reality being due to muscular paralysis; but one of the arguments which you urge in favor of this theory seems to me strongly to support the doctrine of spasm, viz., the *intermission* of the symptoms. Are not the symptoms which result from the paralysis following the division of the pneumogastric nerve constant and permanent instead of intermittent? Again, do we not see cases of diphtheria in which the muscular paralysis undoubtedly exists, but the symptoms of apparently spasmodic cough and suffocative dyspnœa are absent? Permit me to relate a case in illustration, which was most vividly recalled to my mind when I read your paper. Mrs. S., a widow, aged 32, was attacked with diphtheria Dec. 6, 1866. In the morning hours she had been making social calls, feeling in her usual health, and returned to her home about 2 P.M. She declined to take lunch, and soon after complained of feeling ill, but without any marked or definite symptoms. But something in her appearance alarmed her mother, who sent for me, and I first saw her at 5 o'clock the same afternoon. I found that she had diphtheria, the characteristic membrane covering the fauces and tonsils. At ten the same evening I saw her again, when I found that there was complete paralysis of all the muscles of deglutition, so that she had not been able to swallow a drop of anything since my previous visit. The diphtheritic patches now covered the top and posterior face of the epiglottis, which could be easily seen. From this time until her death, which oc-

curred on the 16th, she was never able to swallow even a drop of milk. The attempt to swallow, which was repeated many times a day, produced a suffocative dyspnœa, and the liquid was at once rejected through the nostril. Beef-tea or milk introduced through a tube into the stomach was immediately regurgitated. She was treated by local applications with the sponge probang, inhalations, atomized and hypodermic medication, and medicated and nutritive enemata, and I had, in repeated consultations, the valuable assistance of Prof. Wm. A. Hammond and Dr. J. H. Douglass. Four days before her death all symptoms of diphtheria, except the paralysis, had disappeared, and she died apparently from exhaustion and anæmia. Now the point which attracted the attention of us who were in attendance was, that during the progress of the diphtheria, while she had hurried labored breathing and frequent cough, there never was anything like suffocative dyspnœa or spasmodic cough.

The croup of diphtheria I regard as an entirely distinct and specific disease, although no distinction between the two seems to be made by Trousseau and most of the French writers. But this distinction is so fully recognized by us all here, that it is quite unnecessary for me to say more on this point, except to remark that all I have to say on the treatment of croup will have no reference to the treatment of diphtheria. Now, before entering upon a discussion of the special remedies in croup, I will say a few words on the general principles which govern me in the treatment of this disease. The great fatality of croup is admitted by all, and I think there is hardly a disease which can be

mentioned which requires more prompt and efficient measures to arrest its progress, or more incessant watching, in order to change the treatment in accordance with the change of symptoms and condition of the patient. Success in the medical treatment of this disease depends in a great measure on the use of efficient remedies in the very commencement of the attack. In an advanced stage, where life is in jeopardy from asphyxia, our main reliance must be on surgical treatment, viz., tracheotomy. I will now give in detail my own treatment, which differs in many respects from that of any author that I am acquainted with, and my reasons for following this plan.

1st. I always commence the treatment by an emetic of turpeth mineral (hydrargyri sulphas flava), in doses of from three to five grains, according to the age of the child. If it does not act in fifteen minutes, I direct a second powder to be given. This, however, is rarely necessary, and I have never known a second dose to fail to act in a few minutes, except in one instance, which I will mention hereafter. My reasons for preferring this to all other emetics in croup are the following: It acts much more promptly and efficiently than ipecac or alum; it is tasteless and much more easily administered than either; it does not exhaust and depress the vital power like antimony. It is equally prompt in its action with the sulphate of copper, while it is much more effective as a revulsive and sedative. I think the active emesis from the turpeth mineral accomplishes the following results much more speedily and effectively than any other agent. It depletes the mucous

membrane by an abundant secretion of mucus which is thrown up; it removes from the larynx, by the forced expiration which it causes, any albuminous or fibrinous exudation which may be there in a diffluent state, and which, by remaining, may become subsequently pseudo-membrane; it acts as a powerful revulsive, and thus diminishes the capillary circulation in the trachea and larynx; and thus it becomes a most effective agent in arresting the inflammatory process. I remember that you once asked, some years ago, whether I regarded the mercurial emetic as specially an antiplastic agent. I answer no, except in the indirect way I have mentioned above. I regard it as very important that this emetic should be given immediately on the appearance of the symptoms which threaten croup. It is the only medicine which I have constantly carried in my pocket for twenty-eight years. In all families with young children that I attend, where the slightest tendency to catarrhal laryngitis has been manifested, I have been in the habit of directing that this medicine should be constantly kept where it can be readily found; and I have no doubt that at this moment a hundred families in this city have three-grain powders of the turpeth mineral carefully labelled "croup powders." I think that by this precaution some lives may have been saved; and I am very sure that many a bad night I have enjoyed a quiet, undisturbed sleep, when, had it not been for these powders, I should have been routed out. There is one advantage in their use which I must not omit: if the supposed attack of croup is simply one of laryngismus stridulus, or of what is called false or

spasmodic croup, the powders do no harm. Of course, after such an attack the physician will be summoned for an early morning visit, when he will discover what sort of disease he is called upon to treat. If it prove to be a case of laryngismus stridulus, I endeavor to find the source of the reflex irritation and remove the cause. But if I find evidence of catarrhal laryngitis simply, then I rely mainly on opiates, which I regard as almost the specific for acute catarrh of the respiratory apparatus, whether it occurs in infantile or in adult life. I direct full doses, proportionate to the age of the child, of Tully's powder or the Dover's powder, or the "Brown Mixture" of the U. S. Dispensatory. But I watch such a child closely, visiting it a second time before evening. But if, on my morning visit, I find the child with a quick pulse, hot skin, somewhat hurried breathing, and an occasional ringing cough, but with no thoracic râles, I direct that he shall be kept quiet in bed, comfortably covered, but not with too many clothes, and I prescribe the veratrum viride, in one or two drop doses, according to the age of the child, as for example in the following formula:—

℞ Syr. simple,	℥ i
Aq. puræ,	ʒ vi
Spts. ether. nitros.,	ʒ ij
Tinct. verat. viride,	gtts. 16–30.

M. S. A teaspoonful every 2d hour.

I visit the child at least as often as every 8th hour, and increase or diminish the dose, according to the effect of the medicine on the pulse. I never am satisfied until I find the pulse below 80 per min-

ute, and I then continue the veratrum in half the dose that I found neeessary to bring it down to that point. My experience in the use of the veratrum viride now dates back more than twenty-five years, and I have never found it fail to reduce the pulse of irritation or of inflammation (it will not reduce the rapid pulse of exhaustion), and I have never found the slightest danger or uncertainty in its use, as I watch its effects closely. If thoracic râles, hurried and labored respiration, and other symptoms indicate that the disease is extending downwards, I then substitute for the above prescription something like the following formula, of course varied according to the special indications of the case:—

℞ Mist. acaciæ,
Syr. tolu, aa ℥i
Ammoniæ carb., ℥ss.
Tinc. verat. viride, gtts. 16–30.

M. S. A teaspoonful every 2d hour.

It has sometimes occurred that I have found evidence of increasing laryngeal and tracheal obstruction, and I have in consequence repeated the emetic of the turpeth mineral on the second or third day; but I have never had occasion or deemed it well to repeat it a third time. Several times, a few hours after the emetic, but never during its immediate action, the child has thrown off more or less detached portions of membrane. In two instances I have had perfect casts of the trachea, with its bifurcation and some of the primary branches of the bronchi thrown off. One, in 1856, I exhibited before the Ob-

stetric Section of the Academy of Medicine. It occurred in a child thirty months of age, following measles. The other I exhibited before the Medical Class of Bellevue Hospital Medical College, in the winter of 1862. Both of these children recovered; but I was particularly struck with the fact that there was no immediate improvement of the respiration or apparent amelioration of symptoms directly following the throwing off of the membranous casts. I am indebted to you, some ten years ago, for my knowledge of the tolerance and great value of quinine in large doses in some of the diseases of the respiratory organs of children. I have found it of great service in some cases of croup in the advanced stages, when the respiration is hurried and irregular, the paroxysms of cough becoming less marked, the intermissions less distinct, and the cough husky instead of ringing. I have substituted for the last formula the following:—

℞ Mist. acaciæ,
Syr. senegæ, āā ℥i
Quiniæ sulph.,
Ammoniæ carb., āā ℥ss.

M. S. To be well shaken. A teaspoonful every 4th hour.

When the croup is complicated with lobular pneumonia I usually give the quinine separately, four or five grains three times a day, while the little patient takes the last of the prescriptions containing veratrum viride.

I have thus given you a sketch of my plan of treatment in croup, excluding the croup of diphtheria; of

course the treatment is infinitely modified, in accordance with the varied phases of the disease and the constitutions and the idiosyncrasies of the little patients. I am well aware that the majority of the profession regard the remedies on which I chiefly rely as unsafe, uncertain, and dangerous. Often when speaking of the value of the turpeth mineral in croup to my brethren in the profession, have I been answered by the objection that it is a dangerous and uncertain remedy, and still more frequently have I found my listener ignorant of the nature and action of this agent. My friend and colleague Prof. Doremus, who had watched with anxiety my treatment of one of his children who had a severe attack of croup, gives a most dramatic account of the difficulties he met with in procuring the turpeth mineral, and the mental torture he suffered for two or three hours, when another of his children had an attack of the same disease, a few years subsequently, in Paris. The druggists, not knowing him personally, refused to sell him the dangerous poison, and in the middle of the night he was obliged to hunt up a carriage and drive to the residence of two or three physicians before he could find one who was willing to give him a prescription for the article. I may be permitted to say that my great confidence in the treatment that I have sketched is based on the success which I have had. You who know something of the extent and character of my practice, must admit that I have either been very lucky in never having had a case of true croup, or that I have had an unusual success in treating it; for during the twenty years that I have practised in this city, I

have never lost a case from croup. No burial certificate of mine can be found of death from croup in the mortuary records of the Health Board of this city. I regard this fortunate result as being partly due to the strenuous earnestness with which I impress on the families that I attend the importance of meeting the first symptoms of croup by a prompt and efficient treatment; partly to the fact that the remedy is always kept ready for immediate use, and two or three hours are not lost in sending for a physician, and then in sending to the druggist; partly to the incessant care with which I watch the disease during its progress; and partly to the special agents which I use as remedies. Since my residence in this city I have seen in consultation quite a number of cases of croup which have died. Some had no treatment until the disease had progressed so far that all treatment was useless, and others had very different treatment from that which I have indicated in this paper.

I remain,

Yours faithfully,

FORDYCE BARKER.

85 MADISON AVENUE, April 4, 1870.

(REMARKS BY A. JACOBI, M.D.)

J. Forsyth Meigs, in his Practical Treatise on the Diseases of Children, third ed., Philad., 1858, p. 99, alludes to the turpeth mineral, the subsulphate or yellow sulphate of mercury, the hydrarg. sulphas flava of the American Pharmacopœia, in the following terms:—"Dr. Hubbard, of Hallowell, Maine, recommends it on the

grounds of promptness and certainty, of its never producing catharsis, and lastly of its not being followed by prostration, like that occasioned by tartar emetic. The dose is two or three grains for a child two years old, to be repeated every ten or fifteen minutes until it operates. He says that if the first dose fails, the second usually acts as soon as it reaches the stomach. I have made trial of this remedy in two cases; the first was one in which alum and tartar emetic had lost their power from frequent repetition. The dyspnœa was intense, and as I believed that the only chance of escape for the child was the operation of an emetic, I proposed the subsulphate. The age of the child was three years. Three grains diffused in syrup were administered; it operated powerfully within a few minutes, and when I saw the patient a few hours after, the distressing symptoms were considerably ameliorated. The improvement did not last, however; the child died in a state of exhaustion very soon after. The other case was that of a boy nine years of age, in whom the alum had operated fully; but as it failed to dislodge the membrane, and his situation was desperate if not relieved, I made trial of the turpeth mineral; six grains were given in two doses, at fifteen minutes' interval, but they produced no effect whatever. The case terminated fatally, and the whole larynx and trachea were found filled with a thick membrane."

These are the same cases to which Dr. Auguste Millet refers in his Traité de la diphthérie du larynx—croup—Paris, 1863, p. 165, without adding or claiming any experience of his own. He simply counts up the tur-

peth mineral among the emetics, on the authority of Drs. Hubbard and Meigs. Hardly another mention is made of the same remedy by any of the numerous European writers on croup, either dissenting or consenting, with the exception of those two whose pamphlet I am going to allude to, after having directed the attention of the reader to the fact that evidently in neither of Dr. Meigs' cases the conditions and indications as laid down by Prof. Barker were fulfilled. Prof. Barker insists upon the remedy being administered in the incipient stage, while, according to the report of Dr. Meigs, his cases were wholly unpromising. Still, I cannot but allow the possibility of an *occasional* mistake in the diagnosis when the turpeth has been given in "the incipient stage." However, every case in which emesis brought up a membrane from the larynx or trachea must be taken as conclusive.

There is a single monograph, the only one I know of in any language, on the very same remedy which Prof. Barker has used for twenty-eight years with such remarkable success; it is the "Nouveau traitement du Croup et des Angines courmeuses, par les docteurs Telèphe P. *Desmartis* et Alphonse *Bouché de Vitray*." Paris, 1860, pp. 28.

These authors look upon the diphtheritic deposits in general, and those of croup in particular, as the results of blood-poisoning of a fermentative character—the leptotrix buccalis having been found regularly in their investigations. Thus they required a remedy which would fulfil two indications at once, viz.: to destroy the ferment, and also to remove, by emesis, the deposits.

They ascribe to the turpeth mineral the same anti-fermentative effect which other mercurial preparations, for instance corrosive sublimate, are known to possess, and thus administered it in a large number of cases in an epidemic of croup, observed in the "Département des Landes," with such a surprisingly favorable result that it would look suspicious if it did not fully agree with and be confirmed by the observations of Prof. Barker. They report twelve cases of croup in patients of from two to twenty-three years, with uniformly good results. Turpeth mineral was administered as an emetic, which always brought up membranes; the juice of euphorbia at the same time used as a topic application or gargle; in a few cases also a counter-irritant over the throat or a mustard bath were resorted to in addition.

These are the only literary references to Prof. Barker's remedy I am acquainted with. Personally I had no experience whatsoever with the turpeth mineral, but was greatly interested in an occasional remark of Prof. Barker's concerning his success in treating croup with that chemical. Our readers will easily understand that I longed for more information; and such as the doctor has kindly volunteered to give in the above paper, which he has been good enough to address to me, is herewith placed before them. Whatever may be the immediate favorable impression it may make, there is no doubt that henceforth the medicinal agent so highly recommended, under a name both so familiar to every American reader, and so widely appreciated on the other side of the Atlantic, will be exclusively and thoroughly tested.

Now, while I am proud of presenting Prof. Barker's clinical observations to the readers of this journal, I might add some remarks on a few scientific points contained in his paper that would permit of a discussion; for instance, "the croup of diphtheria," which the doctor regards "as an entirely distinct and specific disease," and the nature and meaning of the neuropathic element in croup. But the discussion of these points, to which I have alluded in my paper on croup (see this journal for May, 1868), so kindly referred to by Prof. Barker, would not at all influence his important therapeutical observation and its appreciation by the profession.