

CAD table - Guidelines

Quantum Biophysical Semeiotics: Basics practical tools

Auscultatory Percussion of the Stomach

The *auscultatory percussion of stomach* plays a primary role in Quantum Biophysical Semeiotics - QBS. Doctor who knows this method and can apply it properly and safely, can observe, in easy and rapid manner at the bed-side, a very large number of both signs and reflexes, which allow him to recognize several pathologies, even potential or in their pre-clinical stages. Notoriously, the stomach is innervated by two gastric nervous plexes, linked to *celiac plexus*, where a large number of reflexes, originating from almost every tissue and organs, end. Interestingly, if we stimulate by digital nail pressure or otherwise by pinching cutaneous trigger-points, in the stomach occur, as already known, volume and form modifications, termed as *gastric aspecific reflex*, vagal and sympathetic, and *tonic gastric contraction*, as in case of appendicitis (Figure 1 and Figure 2), cancer, starting from its initial stage of Inherited Real Risk, rheumatic and autoimmune disorders.

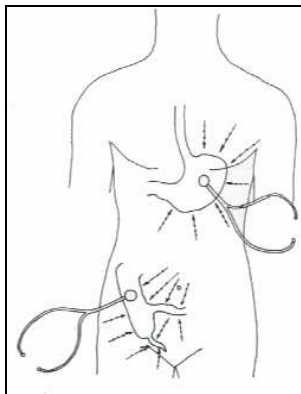


Figure 1

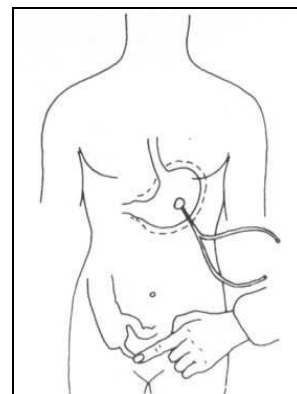


Figure 2

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1- Position of the patient

The patient is lying down in supine position, psycho-physically relaxed, with open eyes to lower melatonin secretion (Figure 3).

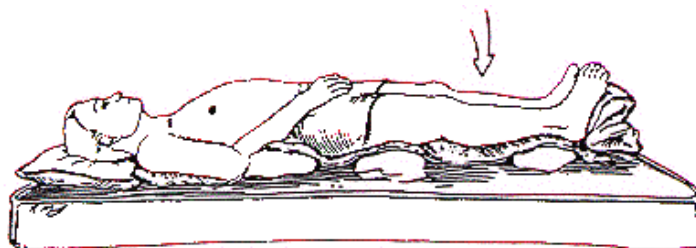


Figure 3

2- Demarcation of the greater curvature of stomach

A short piece of great gastric curvature in its inferior segment have to be ascertained, seen that the stomach can be in different position depending of the patient physical structure (Figure 4, Figure 5, Figure 6).

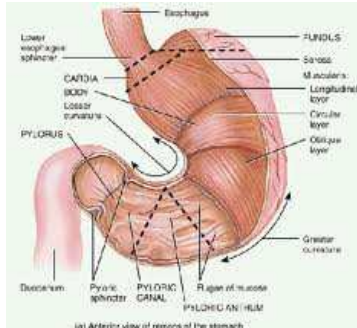


Figure 4

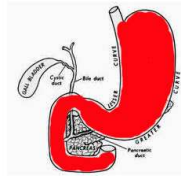


Figure 5

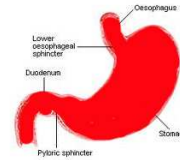


Figure 6

3- Stethoscope positioning

The patient helps physician by fixing the bell-piece of stethoscope on cutaneous projection of the interested parenchyma (i.e., stomach, urether) with a finger-pulp (Figure 6). In the case of Gastric Aspecific Reflex, the bell-piece of the stethoscope is fixed upon any point of cutaneous projection of the stomach.

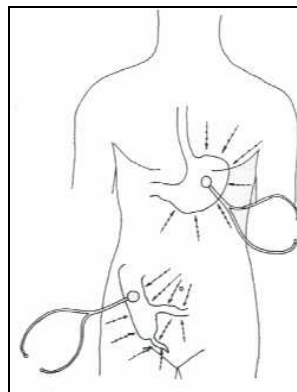


Figure 6

4- Percussion of trigger points

Doctor performs the percussion with middle finger, bended like a little hammer, *directly, very softly, and gently*, on the skin (trigger points, green dots in the Figure 8), two time subsequently on the same point before moving on, towards (green arrows, Figure 7) the bell-piece of stethoscope (1 cm. away), along centripetal and radial lines, as quickly as possible (green dots, Figure 8).

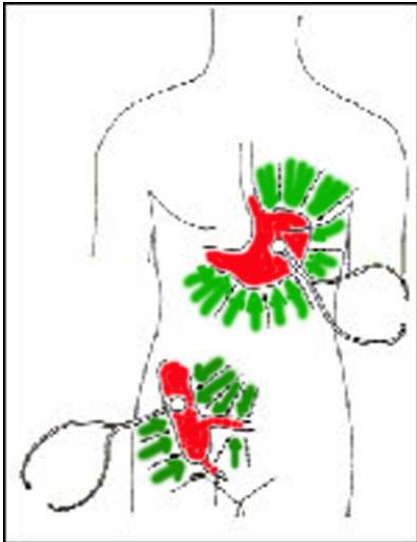


Figure 7

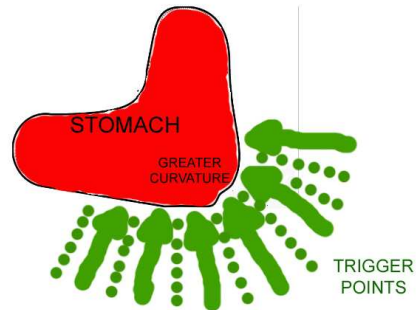


Figure 8

Pay attention! When digital percussion beats “directly” the stomach projection (or the cutaneous projection area of whatever viscera, of course, red areas) percussory sound is perceived clearly modified, more loud, and it appears as “originating near doctor’s ears”. At this point, it is advisable to perform the auscultatory percussion for the second time, at least in initial stages, when there is no great experience, in order to avoid some mistakes, for instance, due to peristaltic wave. Digital percussion must be just on green dots (trigger points), and never on parenchimas (red areas [Figure 7 and Figure 8].

5- Digital pressure applied on precordium (simultaneous to point 4)

Digital pressure of well defined intensity (slight, moderate, intense or hard) applied upon cutaneous projection area of the heart (precordium), brings about different and significative Heart Aspecific Gastric and caecal Reflexes (H.A.G.R.).

6- Auscultation of H.A.G.R.

The H.A.G.R. is characterized by 3 key measures: Latency time, Intensity and Duration of the Reflex.

The time that passes since the beginning of percussion till the initial auscultation of the reflex is called **Latency Time (Lt)**, and is expressed in seconds.

The time that passes from when you start listening to the first reflex until his death is called reflex **Duration (Du)**, which is also expressed in seconds.

The **Intensity (In)** of the reflex refers to the observed gastric dilation and/or contraction, and is expressed in cm.

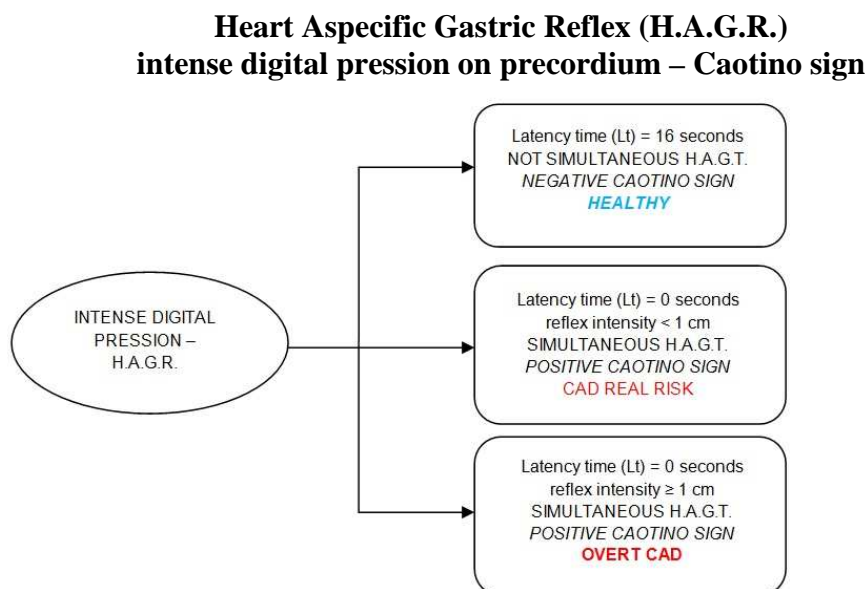
Myocardial Oxygenation

Myocardial oxygen supply can be assessed clinically in a precise way. In health, digital pressure of “mean” intensity, applied upon cutaneous projection area of the heart (precordium), brings about heart specific gastric and caecal reflexes (H.A.G.R.) after a latency time (Lt) of 8 seconds (table 1), informing on myocardial oxygenation at rest, as well under stress situations, such as Valsalva’s Manoeuvre - which allows doctor to assess bed-side endothelial function - lasting about 7 seconds (Stagnaro, 1994). In fact, primary reduction in myocardial blood flow rather than increase in demand seems to be responsible for many angina episodes, even clinically silent: paramount sign, from diagnostic viewpoint!.

In addition, Lt of both caecal and aspecific gastric reflexes (i.e., caecal and gastric dilation) increases significantly, raising to 16 seconds (scheme 6), when digital pressure becomes "intense" (negative Caotino sign), because it stimulates coronary vessels and myocardial fibers (scheme 5), hence inducing local metabolic regulation of tissue-microvascular-units (T.M.U.), i.e. activating microvascular functional reserve - MFR (Goldberger, 1987).

In pathological states such as overt CAD, digital pressure of “mean” intensity on precordium brings about H.A.G.R. after a Lt less than 7 seconds (table 1), while a Lt between 7 and 8 seconds informs us about a CAD inherited real risk in evolution.

Furthermore, *Caotino sign* is positive in case of intense digital pression (Lt = 0) revealing a CAD real risk if the reflex intensity is less than 1 cm, and an overt CAD if the reflex intensity is 1 cm or more (scheme 6). In this last case H.A.G.R. is simultaneous and its intensity is correlated to the numbers of EBD type 1, subtype b), aspecific, pathological neoformed in small coronary arteries, accurate assessment on the basis of the parametric values of middle uretral reflexes (table 2).



Scheme 6. Legend. H.A.R.G. (Heart Aspecific Gastric Reflex); CAD (Coronary Artery Disease); Lt (Latency time)

**Heart Aspecific Gastric Reflex (H. A. G. R.)
mean intensity digital pression on precordium**

Latency time (Lt) in seconds	Latency time – (Lt) after preconditioning (pause of 5 sec.)	MFR Duration (Du) in seconds	Intensity (In) in cm *	fD & equilibria	Diagnosis
Lt = 8	Lt = 16 [Lt = 16 if intense digital pressure – negative Caotino’s Sign]	3 < MFR < 4 normal MFR		fD ≥ 3 (ideal value fD=3.81) strange attractor	Health
Lt = 8	Lt < 16 [Lt = 0 if intense digital pressure – positive Caotino’s Sign]	MFR = 4 compromised MFR	In < 1	2 < fD < 3 limit cycle	CAD Inherited Real Risk
7 < Lt < 8	Lt < 16 [Lt = 0 if intense digital pressure – positive Caotino’s Sign]	4 < MFR ≤ 5 growing compromised MFR	In ≥ 1	1 < fD ≤ 2 limit cycle	CAD Inherited Real Risk in evolution
Lt ≤ 7	Lt < 14 [Lt = 0 if intense digital pressure – positive Caotino’s Sign]	MFR > 5 absent MFR (MFR ≈ 8 angina pectoris)	In ≥ 1	fD = 1 fix point	Overt CAD

Table 1. Legend: MFR (Microcircular Functional Reserve); EBD (Endoarteriolar Blocking Device); CAD (Coronary Artery Disease); fD (fractal Dimension); Lt (Latency time); * in case of Caotino Sign

The two colums in ‘CAD table’ about EBD and Microcirculatory Activation are here note explained because have to do with urethereal reflexes and Microclinical Angiology. Here we explain just gastric aspecific reflexes.

Myocardial preconditioning and EBD

In healthy individuals – in supine position – digital pressure of mean intensity, applied on cutaneous heart projection area, brings about heart gastric aspecific reflex¹ (H.G.A.R.) after a latency time (Lt) of 8 seconds. H.G.A.R. lasts less than 4 sec., soon thereafter disappears for 3-4 seconds. Disappearing time corresponds to *fractal dimension* – fD (scheme 7). Afterwards, a second reflex occurs. The duration of H.G.A.R. unfolds the microcirculatory functional reserve (MFR) activity of related coronary microvessel, thus correlated with the function and anathomy of the microcirculatory bed, or microvascular tissular-unit - M.T.U.

At this point of investigation, the physician quickly interrupts the digital pressure for a length of exactly 5 seconds. Than, Lt and H.G.A.R. are evaluated again: Lt raises to

16 seconds, H.G.A.R. lasts less than 4 seconds, disappearing after roughly 4 seconds: these values evidence a *physiological preconditioning*.

In summary, physiological Lt of H.G.A.R. is 8 seconds at the first evaluation (*basal-line value*), but increases clearly in the second (is double) as well as in the third one, due to the physiological activation of MFR.

In individuals at risk of CAD, Lt at *base-line* is physiological during the first evaluation (8 seconds). However, H.G.A.R. lasts 4 sec. or more and disappears for less than 3 seconds: lowering of fractal dimension². Moreover, preconditioning results “pathological”, as Lt is less than 16 seconds: these values evidence a *pathological preconditioning*.

Interestingly, in patients with coronary heart disorder, even clinically silent, the *basal value* of latency time of gastric aspecific reflex appears to be less than 7 seconds at first evaluation and becomes lower in the second one, in relation to the seriousness of underlying disorder.

Another note-worthy preconditioning permits to discover subjects at “inherited real” risk of arteriosclerosis, as well as arteriosclerotic patients, even clinically silent: digital pressure of mean intensity, applied upon femoral (or other) artery of healthy individuals provokes gastric aspecific reflex, after a latency time of 8 sec. or more, that increases in successive evaluations as far as 12 sec.: *physiological preconditioning*. On the contrary, in subjects, even apparently healthy, but at risk of, or already involved by ATS, *preconditioning* results *pathological*, in relation to the degree of disorder or of its risk.

The above-described biophysiological semeiotic method is proper for clinical preconditioning of almost every organs, it is proved to be useful and suitable for mass preventing or detecting ischaemic heart disease, kidney disorders (including future stones), arteriosclerosis, even clinically silent, arterial hypertension, diabetes mellitus, and so on.

In healthy the *preconditioning* brings about, as natural consequence, an optimal tissue supply of material-information-energy, by increasing local *flow-motion as well as flux-motion* - preconditioning, type I. On the contrary, if real risk is present, *preconditioning* data are almost the same as the basal ones, but Lt is a little shorter than physiological one - preconditioning, type II. Finally, in overt disease, *preconditioning* shows an altered and shorter Lt of reflex in relation to seriousness of underlying disorders - preconditioning, type III (table 1).

At this point, we come back to the former example: in the initial phase of coronary heart disease, which evolves very slowly toward successive phases, “basal” biophysical-semeiotic data can “apparently” result normal. However, under careful observation, the duration of H.G.A.R. is equal or more than 4 seconds (NN < 4 seconds), indicating a local microcirculatory disorder.

Really, in these conditions, EBD function is clearly compromised, but for some time the increased *vasomotility* counterbalances efficaciously the impaired supply of normal blood amount to parenchyma: also the *vasomotion*, at rest, shows parameter values oscillating in physiological ranges, due to the augmented arteriolar sphygmicity; such a condition can be “technically” defined *peripheral heart compensation*.

Noteworthy, from the diagnostic point of view, are also the cardio-caecal and -gastric aspecific reflexes, when accurately assessed: after a Lt still normal (8 seconds), doctor observes a reflexes duration, before the successive one initiates, of 4 seconds ($NN < 4$ seconds), and a differential Lt (fD or duration of reflex disappearing before the beginning of the following) of just 3 seconds ($3 < NN < 4$).

Clinical recognizing of these “slight” abnormalities, really useful in diagnosing initial and/or symptomless disorders, although not difficult to perform, requests a good knowledge, a steady experience and a precise performance of the new semeiotics.

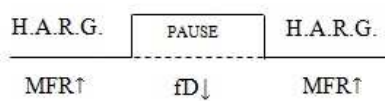
In these cases, *preconditioning* allows in simple and reliable manner to recognize the pathological modifications, mentioned above, which indicate the altered physiological adaptability, even initial or slight, of the biological system to changed conditons as well as to increased tissue demands. The various parameters of caecal, gastric aspecific and choledocic reflex, type of activation and, then, EBD function, related to a defined biological system, parallel and are consistent with the data of *preconditioning*.

Myocardial pH

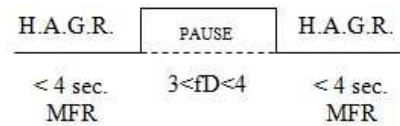
According to clinical and experimental evidences (Stagnaro, 2004a), tissue myocardial pH is related to the reduction of latency time (Lt) and to the extension of the duration of the H.A.G.R., which expresses the local MFR - microcirculatory functional reserve. MFR is inversely proportional to fractal dimension (fD), calculated as simply as the disappearing time of H.A.G.R. before the appearance of the next one (scheme 7).

Summarizing, fD is directly (d) or inversely (INV) related to:

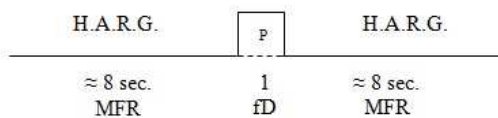
- A) (INV) the local MFR (vasomotility and vasomotion);
- B) (d) the presence, or not, of CAD or inherited Real Risk of CAD (scheme 9);
- C) (d) the Lt of H.A.G.R. and then to tissue myocardial pH (table 1);
- D) (INV) H.A.G.R. length (scheme 8, scheme 10).



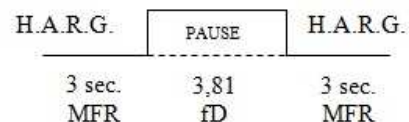
Scheme 7. MFR and fD are inversely correlated



Scheme 8. Physiological MFR – healthy state



Scheme 9. “Angina pectoris” and related fD



Scheme 10. An optimal MFR and physiological fD

Intensity of Gastric Aspecific Reflex – FAQ

What is the unit of measurement of the intensity of gastric aspecific reflex?

The intensity of the reflection is measured in centimeters. Both the gastric aspecific reflex (dilatation of the stomach) and the tonic Gastric Contraction – tGC - can be measured in cm. There is a distinction between physiological expansion and contraction of gastric tonic: the last one only happens in case of disease.

When we say that the Gastric Aspecific Reflex – G.A.R. - is physiological? And when is it pathological?

G.A.R. is "physiological" if the Latency time (Lt) of the reflex, duration (Du) of the reflex, and duration of its disappearance (fractal Dimension - fD) are physiological. G.A.R. is "pathological" if the three parameter values (Lt, Du, fD) are abnormal. If there is Inherited Real Risk and initial pathology (or disappearing pathology) only Du and fD are abnormal, while Lt falls within the normal range.

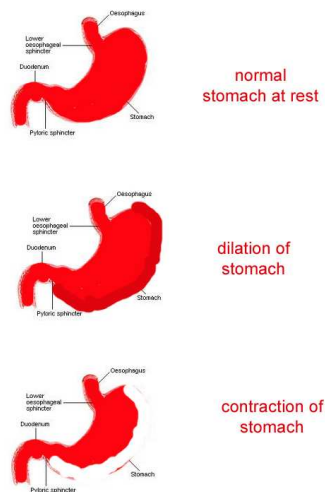


Figure 9

How does the stomach contract and how does it expand?

In Figure 9, there are three cases: *stomach at rest* in its normal shape, *dilated stomach* (in full, with the exception of part-pyloric antrum, duodenum close to the contracts) after auscultatory percussion, and *contracted stomach*. In the case of dilated stomach, the stomach collapses, decreases in thickness, and thus the reduced thickness provokes the stomach expansion, occupying more space than upon an imaginary plane, and given that stimulates the bottom of the big bend in the stomach, it goes down, inter alia, transshipping the start line of the stomach at rest (the central one in Figure 9 in this expansion is highlighted, for example, a 1 cm down, with a different red color). In the case of *tonic Gastric Contraction*, **which always occurs after the dilation or expansion**, but the stomach thickens, and so physically appears to be a contraction, or it goes up, compared to the initial line of

the lower part of the great gastric curve at rest (figure 9 below): this contraction is marked with a white line (i.e., 1 cm) in the figure 9 below.

When does the contraction of the stomach appear?

The contraction appears at the end of the duration of the first reflex, which may persist for three or more seconds. The expansion is always observed, however, and it always appears after the latency time, while the contraction, if there were, appears a few seconds after gastric aspecific reflex (expansion or dilation).

La misura in cm viene fatta quando e dove?

Il quando si può dedurre dalla risposta alla domanda precedente, mentre per il dove, si può far riferimento alle figure di cui sopra, ovvero si tiene come base di riferimento l'immagine più in alto (stomaco a riposo), e partendo da un punto della parte inferiore della grande curva gastrica si cerca dove è andato a finire lo stomaco (se verso l'alto, ovvero contrazione, o verso il basso, ovvero dilatazione).

Where is made the measure?

The measure is taken comparing the baseline of the greater curvature of the stomach - stomach at rest (Figure 9), with the new position of the borderline of the stomach (if upwards in case of contraction, or down, in case of dilation).

In which specific cases appears tGC (tonic Gastric Contraction)?

The tGC is not always, but depends on the case: i.e., there is tCG in Oncological Terrain, inherited real risk of cancer, iappendicitis, reumatic diseases; there is tCG in Overt CAD but not in the real risk of CAD.

Perché in certi casi di reale rischio lo stomaco si contrae, ed in altri no?

Solo nel Reale Rischio Congenito di tumore Maligno si osserva la tGC, ma non negli altri Reali Rischi Congeniti, perché sono differenti i DEB nelle diverse condizioni patologiche, e differente è pertanto l'ostacolo al rifornimento di energia - materia - informazione verso il relativo parenchima.

Why does the stomach contracts in some cases of inherited real risk, and not in others?

For instance, only in the inherited Real Risk of malignant tumor is observed tGC, but not in other inherited real risks because the EBD (Endoarteriolar Blocking Devices) are different, depending on different pathological conditions. We can observe different kind of structural obstacles (technically, different type of EBD, i.e., different structures) to the supply of energy - matter - information towards the relative parenchyma.

Why does the stomach contract? What are the biological, physical and chemical motivations?

This happens because it does increase in vagal or simpathetic tone respectively, slow-growing. In confirmation of this fact it is here suggested a simple experimental test: even in healthy, three seconds after the start of the apnea test, the stomach shows Gastric Aspecific Reflex, followed immediately (adrenaline acid histangic have reached the critical level) by tGC. The expansion however, is physiological, and always appears after the

latency time of reflex (followed then by the contraction, if there is, depending on whether the subject is indeed in good health, and on the specific real risk or pathology).

*“Interestingly, if one stimulates by digital nail pressure or otherwise by pinching cutaneous trigger-points, in the stomach occur **obviously volume and form modifications**, termed as Gastric Aspecific Reflex – G.A.R., vagal and sympathetic, and tonic Gastric Contraction - tGC, as in case of appendicitis. Aiming to corroborate proper application of the method, the doctor can use the apnea test (healthy subject does not breath) or boxer’s test (healthy individual clenches fists) or the **Restano’s manoeuvre** (simultaneous performance of both tests); these tests bring about sympathetic hypertone, that induces gastric aspecific reflex, before of “sympathetic” and than (only apparently) of “vagal” type, in any case short lasting: in later one, in the stomach, fundus and body are dilated, whereas antral-pyloric region contracts. In facts, in healthy, there is a perfect balance also in nervous system, On the contrary, during sympathetic hypertone antral-pyloric region is dilated, too. In case of infiltrative disorder, the site involved by cancer, obviously, does not dilate, whereas all parts dilate intensively in acute diffuse gastritis, e.g., related to the seriousness of disorder.”*

The stomach swells in some of its parts, in other parts contracts if these parts are sick, infiltrated, hardened Where will place the doctor his/her hands in order to measure the intensity?

The doctor only has to calculate the distance between the baseline of the stomach (greater gastric curvature borderline at rest) and the new line, achieved, measured in cm, and observing the distance traveled by the greater gastric curvature in its gastric dilatation and, if there is, the next contraction.

¹ In the stomach, body and fundus dilate; on the contrary, antral-duodenal region contracts.

² H.A.G.R., when pathologically lasting 4 seconds or more (NN < 4 seconds), indicates local microcirculatory remodeling, and thus MFR impairment due to newborn-pathological, type I, subtype b), aspecific, EBD, which reduce tissue oxygenation, through lowering microcirculatory blood-flow.