Measurement of the stiffness of endoscopes—a plea for commonality

EDITOR,—In a previous issue (Gut 2000;46:801–8), Brooker and colleagues described their experience with an exciting new variable stiffness colonoscope. They made the point that a stiffer colonoscopy shaft reduces recurrent looping but makes passage through an angulated sigmoid more difficult and causes more stretching and hence pain when loops do occur. Conversely, the more flexible the colonoscope, the better for negotiating a fixed or narrow sigmoid colon but then to allow recurrent loop formation later in the procedure. Their randomised trial using either a standard Olympus PCF200HL (15.1 mm shaft diameter) or a prototype (Olympus XCP-SH230L—12.9 mm shaft diameter) variable stiffness colonoscope looked very promising although in one case a paediatric Olympus PCF230L (11.3 mm shaft diameter) was required to get past a fixed sigmoid secondary to diverticular disease.

In addition to Brooker et al, there are a number of research workers and endoscope manufacturers interested in colonoscope/flexible sigmoidoscope shaft stiffness and its relation to patient discomfort/procedure time, yet sadly there is no agreement as to the best way to express (and thus directly compare) results. The beam deflection technique adopted by Brooker et al appeared to us to be an entirely arbitrary one involving a strain gauge, 5 cm shaft deflection, and just three duplicate measurements every 10 cm along the three instruments.

We agree with Wehrmeyer et al that flexural rigidity is a more precise, accurate, and reproducible engineering parameter to measure when trying to compare endoscope shaft stiffness. In beam bending theory, the flexural rigidity is EI which is the product of the modulus of elasticity (or Young’s modulus) E and the second moment of area I of the beam cross section about an axis through the centroid perpendicular to the plane of bending. EI is given by the following expression:

\[
EI = W/L^3/12EI
\]

where W is the load applied at the centre of the beam, L is the length of the beam, and \( \delta \) is the deflection at the centre. In our own studies, the value of W (typically either 0.5 to 1 Newtons) was selected such that \( \delta \) (mean of 10 readings) was less than 0.5% of the length of the beam, L.

Following expression:

\[
EI = L^4/384EI
\]

the new commercially available variable stiffness Olympus colonoscope can indeed significantly alter its shaft stiffness from being almost as floppy as a paediatric endoscope to stiff as a standard Olympus 200HL near its most proximal end.

We agree with Brooker et al that modifications that may enhance the efficacy of a variable stiffness colonoscope might include “more floppiness in the paediatric setting and greater stiffness at the maximum stiffness setting”.

We welcome debate and discussion on how best to measure endoscope shaft stiffness. In the meantime, until a better way of expressing the results is suggested, it would seem to us that some form of simple beam displacement methodology to determine flexural rigidity has the advantage of at least being relatively easy, reproducible, and inexpensive to perform.

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Figure 1 Mean (SD) flexural rigidity measurements (N cm) of three different colonoscopes: (a) Olympus PCF2401, (b) Olympus CF200HL, and (c) Olympus variable stiffness CF240AL instrument in its “floppy” and “stiff” modes.

Research outcomes in British gastroenterology: an audit of the subsequent full publication of abstracts presented at the British Society of Gastroenterology

EDITOR,—The presentation of abstracts at scientific meetings provides an opportunity to rapidly convey the results of novel research. It also allows the researcher a chance to receive informal peer review. This may help to clarify aspects of the work, particularly in the identification and correction of potential weaknesses prior to submission for full publication. Although abstracts submitted to conferences are peer reviewed, this process may not be as rigorous as that of an indexed journal considering publication of the full manuscript.

Presentation of an abstract at a prestigious meeting may suggest that full publication is probable. Certainly, acceptance as opposed to rejection increases the likelihood of subsequent publication, but this is not absolute. Other medical specialities have studied their societies’ publication rates and this value varies from 21% to 66%.1 2

There have been no studies evaluating the outcome of abstracts presented at gastroenterology meetings. Therefore, we audited the publication rate of abstracts presented at a single British Society of Gastroenterology (BSG) meeting.

All abstracts presented at the BSG meeting of March 1994 (n=225) were assessed. Two independent database searchers performed (MEDLINE and EMBASE) using cross referencing of first author, senior author, and key words from the abstract title. The abstract and possible resultant manuscript were then examined in tandem to ensure they represented the same study. Where no paper appeared to have been published, the authors were contacted to ascertain the outcome of their abstract.

Factors which may influence publication, including study type, design, category, sample size, journal of publication, impact factor, and lag time to publication were analysed. Data pertaining to submission/publication at the meeting of the American Gastroenterology Association (AGA) in the same year were also collected. Statistical analyses were performed using contingency tables and \( \chi^2 \) statistics for nominal data and the Mann-Whitney U for continuous data. There were 178 abstracts (69.8%) published from this meeting. Median lag time to full publication (fig 1) was 19 months (range 0–66). Of the abstracts published (23.9%) were in high impact factor journals (arbitrarily designated \( \geq 5 \)). The mean impact factor was 2.5 (median 2.9).

There were 96 abstracts from this particular AGA that were concordantly submitted to the AGA. Of these, 73 were accepted for presentation. Ultimately, 58 were fully published. Presentation at the AGA in the same year was the only factor that significantly increased the likelihood of publication (p=0.001; odds ratio 3.1 (95% confidence interval 1.5–6.4)). Acceptance at the AGA was a strong predictor of subsequent publication and may represent the hypothesis that concordance of two independent referee systems often reflects the papers of greatest scientific merit. Alternatively, this may suggest that AGA reviewers are more stringent. This is not possible to assess with the data available.

This is the first study to assess publication rates of the BSG or indeed any specialty in the UK. We chose to study the abstracts of the 1994 BSG meeting because previous reports have suggested that the majority of abstracts are published in indexed journals within four years of presentation.1 2 3 4 The outcome of one individual meeting may not be considered as representative of other meetings and could limit the validity of our...
Leptin in the human stomach

EDITOR.—After the report in 1998 by Bado and colleagues1 describing the presence of leptin in rat stomach, we have recently reported the first evidence of leptin in the stomach mucosa of humans.2 It was shown that the cells in the lower half of the stomach glands were clearly immunoreactive for lepin, and that both mRNA and leptin protein in the human gastric epithelium were detected. Western blot analysis showed the presence of a 16 kDa band corresponding to leptin and a 19 kDa band which, as suggested for rats,1 could represent a leptin precursor. It was also shown that secretory granules of chief cells contain this hormone, suggesting that gastric leptin could function in the short term system control of feeding behaviour and that it is secreted (probably together with pepsinogen) in the stomach lumen by chief cells. Confirmation of these findings was reported by Sobhani and colleagues.3 They also showed the presence of leptin receptor in stomach epithelium, suggesting a possible paracrine pathway for leptin. Stomach leptin levels seem to be higher in humans than in rats.3

Interestingly, Sobhani et al have also shown1 that gastric leptin is simultaneously released into the blood and into the gastric juice by pentagastrin and secretin. They suggested that secretin has a direct effect on gastric chief cells, an idea based on the presence of secretin receptors on these cells4 and on the efficacy of secretin in stimulating pepsinogen secretion.1

However, by immunoelectron microscopy we observed5 the presence of leptin not only in chief cells but also in endocrine cells exhibiting a distinctive morphology in the basal portion of the gland. These cells showed secretory granules labelled with many leptin-gold particles.6 Its ultrastructure corresponded to the P cell type.6

Thus secretory granules of both endocrine and chief cells contain leptin.7 It is probably secreted in the stomach lumen by chief cells and into the stomach circulation by a special type of endocrine cell. The observation that intravenous infusions of pentagastrin or secretin caused an increase in circulating leptin levels seems to be higher in humans than in rats.8

In conclusion, acceptance of the main physiological role for this hormone is foreseen.

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Histological and genetic heterogeneity in synchronous hepatocellular carcinoma

EDITOR.—The recent paper by Sirivatanayukorn et al (Gut 1999;45:761–5) focused once again on the unresolved question as to whether (i) hepatocellular carcinoma (HCC) in human liver develops from a single clone or from multiple parallel clones, (ii) among multiple tumour nodules present in many patients, the smaller lesions represent intrahepatic metastases or “de novo” cancers. The authors correctly acknowledge that “information on the clonal origin of tumours will influence management strategies for prevention of recurrence after operation”. They used arbitrarily primed polymerase chain reaction (AP-PCR) to compare the DNA fingerprint of HCCs and regenerative nodules (RN) removed from cirrhotic explant livers. They found considerable genomic heterogeneity in 54 HCCs and 31 RNs that were microdissected. No tumours (either HCCs or RNs) had identical electrophoretic

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Figure 1 Time between abstract presentation and publication.

Cumulative % of published articles

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patterns. Contrary to expectation, even “satellite” nodules in close proximity within the same segment of the liver were found to have distinct genomic patterns. They concluded that their data suggest poor patient survival after surgical resection if the smaller tumours are not treated at the same setting as the larger ones.

We would like to make some comments. HCC arising in cirrhosis is frequently multifocal. This is supported by epidemiological studies and by the fact that a diffuse underlying viral disease facilitates multifocality, in particular when HCC is related to hepatitis C viral infection. In addition, primary multifocality is supported by the high incidence of non-parenchymal lesions such as dysplastic nodules, in the setting of chronic liver disease. Even when a word of caution is suggested before extrapolating data and conclusions from this paper to all HCCs. In fact, there is a selection bias that could be responsible for the observed findings, and/or clinically evident cirrhosis for liver transplantation because of a diffuse, usually viral related cirrhosis in the absence of clinically evident large nodules. In these cases HCC is often an incidental finding and is mostly, if not always, multifocal. On the contrary, in a consecutive surgical series of resected patients, 44 of 49 patients without cirrhosis (88.2%) had a unique macroscopic nodule restricted to the right lobe, larger than 5 cm in nine of 44, whereas right lobe involvement occurred in 66 of 104 patients with cirrhosis (63.4%; p<0.001). Satellite nodules were found in only four of the 49 patients of the former group (8%). Viral infection was detected in 38.7% of patients in the former group compared with 93.7% of patients with cirrhosis (p<0.001). In particular, the following findings were observed: (1) an as yet not well defined proportion of patients (10–20%) showed monoclonal HCCs, which were well capsulated, located in the right liver, with low tendency to vascular spread, and usually not associated with viral infection; and/or clinically evident cirrhosis. Interestingly, these lesions remained unique even when greater than 5–6 cm (up to 10 cm) without satellite lesions; (2) when larger than 10 cm, these HCCs had conspicuous histological features of monoclonality with the same initial nodule, showing different histological variants (up to five), each of which had a different genetic pattern. In these very large tumours, satellite nodules were similar to one of the clones in the surrounding, or even different, but were still nodules originating from the initial “mother” lesion. In fact, in most cases, they remained restricted to the right lobe, close to the larger nodule, without left lobe involvement. Therefore, even if genetic analysis is a powerful tool in detecting that two samples with the same genetic fingerprints belong to the same clone, a word of caution is suggested before stating the opposite, namely that satellite nodule in close proximity to a larger lesion, within the same liver segment, is a different tumour, a “de novo” lesion, rather than a metastasis from the original tumour, simply because of genetic heterogeneity.

Phenotypic expression of the HFE gene mutation (C282Y) among the hospitalised population

Edron—Distante and colleagues (Gut 2000;47:575–9) found that C282Y homozygotes detected by testing all patients acutely admitted to hospital for non-liver associated problems had a considerably lower transferrin saturation during the acute illness (median 71%). Indeed their strategy of screening for haemochromatosis should be performed in relatively well subjects in the outpatient setting. Moreover, selecting target population for haemochromatosis testing is best restricted to those with end stage liver disease undergoing transplantation who did not have genetic problems had a considerably lower transferrin saturation (Mayo Hepatol 2000;18:86–91). Cetta F, Montalto G, Gori M, et al. Different carogenic pathways are activated in viral and non-viral hepatocellular tumors. Hepatogastroenterology 1998;45:569.

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The African enigma: the parasite’s perspective

Editor,—We would like to thank Professor MacDonald for his interest in our work, and for his recent comment on our paper (Gut 2001;48:10–11). However, we must take issue with a number of his comments.
With respect to the clinical implications of our study, we have not advocated treatment of *Helicobacter pylori* infected patients with intestinal parasites for the purpose of inducing a Th1/Th2 immune response, a possibility raised by Professor MacDonald. As Professor MacDonald is well aware, this approach has been suggested for a number of chronic diseases such as inflammatory bowel disease. However, in the case of chronic *H pylori* infection, antibiotic therapy has proved effective and in our opinion is a much safer and more palatable approach for most patients.

We appreciate Professor MacDonald’s careful analysis of our histopathological results. However, we are confused regarding his use of the term “negative points” that were not sufficiently emphasised. The main findings in our study were that *H pylori* co-infection attenuated the degree of parietal cell loss, mucous cell hyperplasia, and metaplasia, and resulted in an increase in bacterial colonisation. The changes in inflammation, as graded histologically, were clearly less marked. These latter findings simply underscore the notion that it is the Th helper type of immune response that rather than the overall severity or histological grade of inflammation that determines eventual epithelial injury. In addition, it is generally recognised that in the *H felis* mouse model, there is some degree of variability with respect to the degree of inflammatory response, which is well illustrated by our data. It is puzzling that Professor MacDonald would equate this biological variation with a problem regarding the “quality of the data”.

Further questions were raised regarding the conclusion that *H pylori* infection biased the immune response to *H felis* along the same pathway. Our data clearly show that Th1 immune responses were decreased and Th2 immune responses were increased, and this was supported not only by cytolytic profiles but also by *H felis* specific humoral responses. We agree that this immunomodulatory effect may not be true for every intestinal parasite. However, as pointed out in our paper, other parasites such as *Schistosoma mansoni* have also been shown to induce polyclonal Th2 responses and downregulate intestinal Th1 responses. The question is whether Professor MacDonald raises regarding the specificity of the Th2 response for *H felis* (as opposed to *H pylori*) is an interesting one. However, the explanation that the increased Th2 cytokines in the stomach of mice infected with both *H felis* and *H pylori* are derived from “migration into the infected gastric mucosa of Th2 cells responding to *H pylori* antigens” seems less likely in our opinion.

We would agree that induction of a Th2 anti-*H felis* response may not be desirable in every instance. However, this comment again seems to miss the point. Data from numerous animal models have shown that a reduction in mucosal Th1 response together with upregulation of a mucosal Th2 response is associated with decreased progression to gastric cancer. It is clear that intestinal helminth infections are common in Africa, and also that there is marked variation in the pattern of helminth infections from continent to continent. The review by Professor MacDonald, aside from contributing insightful commentary on the topography of Africa and South America, has not provided additional information regarding the variable patterns and types of helminth infections in the two continents. Recent data from Mitchell and colleagues have supported the hypothesis that a Th2 polarised response to *H pylori* is more common in Africa while a Th1 polarised response is more common in Europe and Australia. We would suggest that further investigations of intestinal helminths, as well as host genetics, should be considered to account for patterns of immune response to *H pylori*, as well as the differing rates of gastric cancer induction.

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Liverpool biopsy: “blind” or under ultrasound control

EDITORS,—We wish to comment on the paper by Shah et al (*Gut* 1999;45:628–9) and subsequent correspondence (*Gut* 2000;47:455) from Aspinal.

The case for the superior safety of ultrasound guided liver biopsy has not yet been proved and the British Society of Gastroenterology Guidelines (1999) do not advocate this as routine best practice. Perforation of the gall bladder is a very rare complication (eight times more than biopsies in the series reported by Piccinino and colleagues) and one of us has seen the records of a case in which the gall bladder was punctured at liver biopsy done under real time ultrasound guidance and in fact was healing. Until such time as the evidence clearly supports a change in standard practice, a bid for legal redress by patients who suffer a complication of “blind” liver biopsy is unlikely to succeed, assuming that the indication for the biopsy was sound, the usual precautions were observed, that detailed informed consent was obtained setting out the nature of the risks and their frequency, and that the operator had sufficient experience or supervision.

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Reply

EDITORS,—We agree with Dr Murray-Lyon and Mr de Wilde that patients should be properly informed about how a procedure is performed, the complications and risks, as well as alternatives. It is important that practitioners of alternatives that many “prudent patients” will choose to have an ultrasound guided biopsy. In the era of the Bristol Enquiry into deaths associated with cardiac surgery, any “reasonable, doctor” can do no less.

It is important that members of the medical and legal profession appreciate the difference between an “act of god” and an “accident”. Everybody appreciates that complications arising from these procedures are not deliberate. Settlements for “acts of god” are unlikely to be successful whereas “accidents” (be it car, train, or medical) are considered appropriate to seek redress if they could have potentially been avoided or the risks reduced.

We agree that death and/or gall bladder perforation is rare following liver biopsy. This does not remove the requirement however for best practice with the least risk to the patient. In layman’s terms, Lindor et al reported a twofold higher risk of bleeding using the “blind” approach with the probability of this occurring by chance being one in 14. We very much hope that practitioners such as Dr Murray-Lyon are advising their patients of figures such as these as part of their consent procedure so that the patient can make an informed decision as to which method they opt for.

An additional point of our original article, which has not been alluded to by Dr Murray-Lyon and Mr de Wilde, is that many centres no longer use the “blind approach”. The training available for registrars to become proficient in this approach is therefore declining. As stated in previous correspondence, the culture of “see one, do one, teach one” is no longer acceptable.

It is unfortunate that this discussion is unlikely to be settled until a legal action takes place. The scenario is becoming clearer: a civil court action (where most likely probabil- ity is the burden of proof) with a patient who has suffered a complication following a “blind” procedure. The case will be decided on the perceived competence and training of the doctor involved and on the details of the information provided to the patient and the consent obtained. What is clear however is that the unfortunate patient is unlikely to be a gastroenterologist or radiologist as, of the numerous colleagues we have spoken to, a single one has opted for the blind approach if both were available.

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Guidelines for the management of iron deficiency anaemia

EDITOR,—In reply to Dr Scott's letter (Gut 2001;48:284), I would add that when iron deficiency coexists with the anaemia of chronic disorders (ACD) such as rheumatoid arthritis, a low transferrin saturation loses its diagnostic specificity due to the fact that comparable degrees of transferrin saturation occur in patients with the sole diagnosis of ACD.1 The corollary, in this context, is that the behaviour of ferritin as an acute phase reactant negates the expected fall in serum ferritin, with consequent loss of sensitivity in this parameter.2 Even so, in a comparison of bone marrow findings with tests such as transferrin saturation and serum ferritin in a study comprising patients with a variety of haematological disorders, “the most useful single variable to discriminate patients with iron deficiency from all other patients was serum ferritin.”3 Since then, the most promising test for identifying iron deficiency when it coexists with chronic inflammation has been the ratio of serum transferrin receptor/log serum ferritin (so-called TfR-F index), which achieves an unequivocal separation between iron deficient patients with coexisting chronic inflammation compared with those with the sole diagnosis of chronic inflammation.4 Even in that study, the receiver operating characteristic curve for serum ferritin, on its own, was diagnostically superior to the one generated by transferrin saturation.5

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Falk Symposium No 124: Medical Imaging in Gastroenterology and Hepatology
This Falk Symposium will be held on 28–29 September 2001 in Hannover, Germany. Further information: see Falk Symposium No 123 above.

9th Asian Conference on Diarrheal Diseases and Nutrition
This meeting will be held on 28–30 September 2001 in New Delhi, India. The organisers hope the meeting will promote meaningful and effective collaboration among individuals/institutions towards control of the major health problems in Asia, particularly those affecting women and children. Further information: Professor M K Bhan, Coordinator, Centre for Diarrheal Disease and Nutrition Research, All India Institute of Medical Sciences, New Delhi, Tel: +91 11 6968322; fax: +91 11 6862662; email: info@ixac2001chicago.com; website: www.ixa2001chicago.com

Falk Symposium No 125: Cytokines in Liver Injury and Repair
This Falk Symposium will be held on 30 September to 2 October 2001 in Hannover, Germany. Further information: see Falk Symposium No 123 above.

Falk Symposium No 126: Hepatocyte Transplantation
This Falk Symposium will be held on 2–3 October 2001 in Hannover, Germany. Further information: see Falk Symposium No 123 above.

EASL Single Topic Conference
The EASL Single Topic Conference “Liver fibrosis: from basic science to clinical targets” will be held on 12–13 October 2001 in Florence, Italy. Organisers: Massimo Pinzani (University of Florence) and Detlef Schuppan (University of Erlangen-Nuernberg). The aim of the conference is to provide the latest information on this key area of hepatology and to translate the current knowledge into clinical terms. It is directed at both the expert in the field and the general hepatologist. Further information: Massimo Pinzani, Dipartimento di Medicina Interna, Università degli Studi di Firenze, Viale GB Mor- gagni, 85, I-50134 Firenze, Italy; Tel: +39 055 4277845; fax: +39 055 417123; email: m.pinzani@dfc.unifi.it

Lecture Course in Coloproctology
This course will be held on 15–17 October 2001 in Harrow, UK. Professor Russell Stitz from Australia will be the Sir Alan Parks Visiting Professor and, for the first time, there will be a Sir Francis Avery Jones Visiting Professor, which will be Professor Paul Rutgeerts from Belgium. Further information: The Administrations, St Mark’s Academic Institute, St Mark’s Hospital, Northwick Park, Harrow, Middx, HA1 3UJ, UK. Tel: +44 (0)20 8235 4046/8; fax: +44 (0)20 8235 4039; email: smarks@ic.ac.uk; website: www.stmarkshospital.org.uk

International Symposium on Hyperammonemia, Liver Failure and Hepatic Encephalopathy
This symposium will be held on 20–22 October 2001 in Valencia, Spain. Further information: Catedra Santiago Grisolía, Fundación Museu de les Ciències Príncipe Felipe, Ciutat de les Arts i les Ciències, Avda. Instituto Obreiro, s/n, 46013 Valencia, Spain. Tel: +34 96 197 44 66; fax: +34 96 197 44 70; email: catedra@cc.ac.es. Deadline for reception of abstracts is 15 July 2001.

ICGHH-2: The Second Iranian Congress of Gastroenterology and Hepatology
The main Iranian meeting of gastroenterologists and researchers in this field will be held on 27 October to 1 November 2001 in Tehran, Iran. Further information: Dr Shahin Merat, Digestive Diseases Research Center, Shariati Hospital, N. Kargar Street, Tehran 14114, Iran. Tel: +98 911 717 3966; fax: +98 21 225 3635; email: merat@ams.ac.ir; website: www.ams.ac.ir/icgh. Deadline for submission of abstracts is 31 May 2001.

Falk Symposium No 127: Autoimmune Diseases in Pediatric Gastroenterology
This Falk Symposium will be held on 8–9 November 2001 in Basel, Switzerland. Further information: see Falk Symposium No 123 above.

42nd Annual Conference of the Indian Society of Gastroenterology
This conference will be held on 23–29 November 2001 in Lucknow, India. The programme includes two pre-conference symposia (on gastrointestinal motility and scientific communication, on 23 November), a one day postgraduate course or CME (24 November), and an endoscopy workshop (28–29 November). Further information: Dr S R Naik, Department of Gastroenterology, SGPGI, Lucknow 226014, India. Tel: +91 522 440700 or 440800, ext 2420; fax: +91 522 440078 or 440017; website: www.sgpgi.ac.in/conf/igsg2001.html

41st St Andrew’s Day Festival Symposium on Therapeutics
This will be held on 6–7 December 2001 in Edinburgh, UK. Further information: Ms Eileen Straw, Symposium Co-ordinator. Tel: +44 (0)131 225 7324; fax: +44 (0)131 220 4393; email: e.strawn@rcpe.ac.uk; website: www.rcpe.ac.uk

14th Intensive European Course of Digestive Endoscopy
This course will be held on 17–18 December 2001 in Strasbourg, France. Further information: Michele Centonze Conseil, 6 bis rue des Cendriers, 75020 Paris, France. Tel: +33 1 43 49 68 88; fax: +33 1 43 49 68 58; email: mail@m-centonze-conseil.com

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