Communication from the ASGE Standards of Practice Committee

GUIDELINE

Routine laboratory testing before endoscopic procedures

This is a clinical update discussing the use of periendoscopic laboratory testing in common clinical situations. The Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE) prepared this document by using MEDLINE and PubMed databases to search for publications between January 1990 and December 2013 pertaining to this topic. The keywords "endoscopy" and "laboratory" were used with each of the following: "preanesthesia," "preoperative," "routine," "screening," and "testing." The search was supplemented by accessing the "related articles" feature of PubMed with articles identified on MEDLINE and PubMed as the references. Additional references were obtained from the bibliographies of the identified articles and from recommendations of expert consultants. When few or no data were available from well-designed prospective trials, emphasis was given to results from large series and reports from recognized experts. Weaker recommendations are indicated by phrases such as "We suggest…," whereas stronger recommendations are stated as "We recommend…." The strength of individual recommendations was based on both the aggregate evidence quality (Table 1)[1] and an assessment of the anticipated benefits and harms.

ASGE guidelines for appropriate use of endoscopy are based on a critical review of the available data and expert consensus at the time that the documents are drafted. Further controlled clinical studies may be needed to clarify aspects of this document. This document may be revised as necessary to account for changes in technology, new data, or other aspects of clinical practice and is solely intended to be an educational device to provide information that may assist endoscopists in providing care to patients. This document is not a rule and should not be construed as establishing a legal standard of care or as encouraging, advocating, requiring, or discouraging any particular treatment. Clinical decisions in any particular case involve a complex analysis of the patient's condition and available courses of action. Therefore, clinical considerations may lead an endoscopist to take a course of action that varies from the recommendations and suggestions proposed in this document.

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Routine preprocedure laboratory testing is the practice of ordering a set panel of tests for all patients undergoing a given procedure, irrespective of specific information obtained from the history and physical examination. There are insufficient data to determine the benefit of routine laboratory testing before endoscopic procedures, and therefore data must be extrapolated from surgical series and nonsurgical interventions. Most studies indicate that physicians overuse laboratory testing and that routine preoperative screening tests are usually unnecessary.[2-8] In a study involving 2000 patients,[9] only 40% of preoperative tests were done for a recognizable indication, and less than 1% of the tests revealed abnormalities that would have influenced perioperative management. Moreover, no adverse events were attributable to the identified laboratory abnormalities. Other studies have shown similar results and confirmed a lack of benefit from routine preoperative testing in both adult and pediatric patients.[10-12]

An evaluation of routine laboratory testing in the periendoscopic period should consider the frequency of abnormal test results within a given population, the accuracy of the tests, the risks of the planned procedure, the use of moderate sedation versus anesthesia, and whether an abnormal result will affect the decision to perform endoscopy or alter periprocedural management or outcome. Individual patient and procedure risks should be factored into the decision to perform periendoscopic laboratory tests. General risk estimates are available for common endoscopic procedures.[13-16]

The cost of screening and the expense of follow-up testing to evaluate often minor abnormalities that seldom improve patient care must also be considered. Furthermore, falsely abnormal test results may unnecessarily delay endoscopy and subject the patient to additional risks, with untoward health and economic consequences.[17]

COAGULATION TESTS

The definitions of coagulopathy and thrombocytopenia and the threshold laboratory values (international normalized ratio [INR], platelets) that are considered acceptable for endoscopy and surgery have not been clearly established. This document is designed to assist in the selection of patients for whom testing is performed, but it is not intended to determine how a health care professional applies these results to individual patients.

TABLE 1. GRADE System for Rating the Quality of Evidence for Guidelines[1]

Quality of evidence	Definition	Symbol
High quality	Further research is very unlikely to change our confidence in the estimate of effect	⊕⊕⊕⊕
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate	⊕⊕⊕◯
Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate	⊕⊕◯◯
Very low quality	Any estimate of effect is very uncertain	⊕◯◯◯

Prothrombin time, INR, and partial thromboplastin time

In patients without evidence of a bleeding disorder or coagulopathy, the prothrombin time (PT), INR, and partial thromboplastin time (PTT) neither predict nor correlate with intraoperative or postoperative hemorrhage.[18-21]

Furthermore, when bleeding does occur, it typically does so in patients with normal coagulation parameters in the absence of clinical risk factors, as shown in studies evaluating patients who underwent bronchoscopy with biopsy or transjugular liver biopsy.[20,22] In the absence of clinical suspicion of a bleeding diathesis, abnormal PT results are found in less than 1% of patients.[23,24] Moreover, an abnormal PT result does not accurately predict bleeding, nor does a normal value ensure hemostasis.[25]

Abnormal PTT results are encountered in approximately 6.5% of patients, with reports as high as 16.3%.[21] One presumed justification for routine coagulation screening is to identify patients with undiagnosed hemophilia or von Willebrand disease[26] because mild cases of hemophilia may escape detection until early adulthood, when hemorrhage may complicate major trauma or surgery. The PTT is not sensitive for hemophilia and has a false-positive rate of approximately 2.3%.[27] Moreover, the calculated incidence of hemophilia in males without a family history of the disease or a history of major trauma or surgery is only 0.0025%.[28] Therefore, a screening PTT for hemophilia is not recommended in the absence of clinical suspicion.

An abnormal PTT result does not reliably predict perioperative hemorrhage. A study of 1000 patients found that all patients with a prolonged PTT had clinical risk factors for bleeding,[29] suggesting the need to determine testing on a directed history and physical examination. Similarly, a recent study evaluating the utility of routine coagulation testing in children undergoing endoscopic procedures found abnormal PT and/or PTT test results in 16.8% of patients. However, these results did not predict bleeding episodes.[30] The PT and INR do not predict bleeding risk in liver disease because it relies on thromboplastins and measures only the activity of procoagulants and not anticoagulants, both of which may be depressed in patients with advanced liver disease.[31-33] Routine PT and PTT measurements are not clinically useful unless the patient has a history of abnormal bleeding or known bleeding disorder or malnutrition; is receiving prolonged therapy with antibiotics associated with clotting factor deficiencies; is receiving anticoagulant therapy; or has prolonged biliary obstruction.[6,8,34-36]

Platelet count

Similar to coagulation studies, a platelet count is not routinely advised unless there is a suspicion of thrombocytopenia based on the history or physical examination. Such clues may include a history of excessive bleeding or easy bruisability, myeloproliferative disorder, or the use of medications that decrease the platelet count. Thrombocytopenia occurs in less than 1% and results in altered care in 0.3% or less of surgical patients.[3,8,24]

Bleeding time

Multiple studies indicate that routine preoperative measurement of bleeding time is not useful in predicting hemorrhage.[37] Although newer techniques to assess platelet function are available,[38,39] these tests have not been validated in terms of assessing the risk of perioperative bleeding.[40-42] Contradictory results have been reported between test results and clinical endpoints such as bleeding.[40,43,44] It is unclear whether these tests are clinically useful in patients with renal failure[45] or in those receiving aspirin or other antiplatelet agents.

In summary, in the absence of clinical suspicion, abnormalities of hemostasis are uncommon, and routine preoperative screening for coagulopathy with PT, INR, PTT, platelet count, or bleeding time, either alone or in combination, is not recommended.[46-48]

CHEST RADIOGRAPHY

Preoperative chest radiography is often recommended for patients 60 years or age or older, particularly those with a strong smoking history, recent respiratory infection,