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False positive pregnancy test in a patient presenting for colonoscopy

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Abstract: Gastrointestinal malignancies can rarely be associated with elevated βhCG which can result in positive pregnancy test. We present the case of a 37 year old female patient with intra-hepatic carcinoma and positive urine pregnancy test who required anesthesia for diagnostic colonoscopy. We proceeded with the anesthesia and the colonoscopy because the patient was a credible historian and the fact that her diagnosis could explain the positive pregnancy test.
Keywords: Pre-anesthesia pregnancy testing, false-positive pregnancy tests, gastro-intestinal malignancies.

INTRODUCTION:

Patient history has been shown to be an unreliable method for excluding pregnancy [1-3]. Our hospital has, therefore, adopted the conservative policy of routinely performing urine pregnancy tests on all females between the ages of 12 year old and 55 year old prior to receiving any type of anesthesia (excepting patients in whom pregnancy is highly unlikely due to hysterectomy, chemotherapeutic drug use, etc.).

The following is a report of a patient with a newly diagnosed intra-hepatic carcinoma who presented for colonoscopy to rule out a colon primary. Pregnancy, she asserted, was not a possibility; but her pre-procedure urine pregnancy test was positive.

CASE REPORT:

A 37 year old, 78 kg female presented to the GI Endoscopy Suite for colonoscopy. A month prior, she presented with several months history of right upper quadrant pain. A CT Scan revealed a 12.5 cm mass in the right lobe of the liver with small satellite nodules, as well as retroperitoneal adenopathy. A percutaneous biopsy of the lesion demonstrated adenocarcinoma, suggestive of pancreatobiliary or gastrointestinal origin. As part of her evaluation for possible hepatic trisegmentectomy, she was scheduled for colonoscopy to rule out colon primary.

The patient was asymptomatic and had regular menstrual cycles; the last one started 3 weeks earlier. She had no medical comorbidities and took no medication prior to this encounter. Her husband had died six months earlier and she denied any possibility of being pregnant. Nonetheless, a urine beta human chorionic gonadotrophin (βhCG) test was performed as per our hospital's protocol. We used the HCG Cassette Rapid Test (Cardial Health, Waukegan, IL). The test was positive. A second urine sample was obtained and the repeat test showed similar result. An empathetic discussion with the patient strongly projected a reliable historian. After consideration of the clinical history and the possibility that the elevated βhCG was being produced by the intra-hepatic carcinoma the patient underwent colonoscopy with moderate sedation. During the procedure standard ASA monitors were used. For sedation she received lidocaine 40 mg and propofol 40 mg bolus followed by 100 mcg/kg/min infusion. The 20 minutes procedure yielded normal findings.

As part of her surgical preparation, she underwent right hepatic vein embolization in order to hypertrophy her left lobe. Unfortunately, a follow-up CT scan showed new lesions in the left lobe of the liver as well as increasing adenopathy which ruled out the surgical option.

DISCUSSION:

Pregnancy screening prior to non-obstetric surgery is a well established practice in many institutions, including our own. Positive pregnancy test findings have been reported in 0.3–1.3% of asymptomatic surgical patients and led to postponement, cancellations, or changes in management [1, 2]. The reason for postponing these cases is the presumed risk of general anesthesia for the fetus. That risk, however, is not well established due to ethical concerns of conducting large randomized trials in this population. Given this difficulty, the American Society of Anesthesiologists Task Force for Pre-anesthesia Evaluation believes that the literature is inadequate to inform patients or physicians on whether anesthesia causes harmful effects on early pregnancy [3].

Pregnancy tests depend on the measurement of βhCG in serum and urine [4]. Over 40 different laboratory tests are used, most of which employ multi-antibody sandwich assay using labeled enzyme detection. βhCG from the implanting blastocyst first appear in maternal blood around 6-8 days following fertilization. Urine tests may reveal positive results 3-4 days after implantation; by 7 days (the time of the expected menstrual period) 98% will be positive. A negative result one week after the missed period virtually rules out pregnancy.

With the present generation of test kits, false positive results due to interfering materials are extremely unlikely. The current generation of tests is based on monoclonal antibodies to the beta subunit of HCG. Such a sensitive test virtually eliminates the possibility of cross reaction with leutinizing hormone, follicule stimulating hormone, or thyroid stimulating hormone, all of which have structures similar to the alpha subunit of HCG. If pregnancy can be ruled out, an elevated serum level of βhCG is a strong indicator of cancer [5]. It is an extremely sensitive and specific marker for trophoblastic tumors of placental and those with germ cell origin.

Non-trophoblastic disease is a less common source of βhCG. Tissues from many parts of the body normally secrete low levels of βhCG, including lung, bladder, adrenal glands, colon, thyroid, and uterus. Malignancies that occur in these tissues have been known to cause elevated βhCG. Lung tumors are the most frequent βhCG producing non-gynecologic tumors in reproductive age women [6]. βhCG is also produced by gastrointestinal malignancies in which case it is associated with reduced survival [6].

In the reported case, we proceeded with the anesthesia and the colonoscopy because the patient was a credible historian and the fact that the patient had the diagnosis of GI adenocarcinoma, which is known to secrete βhCG. Had there been any doubt an obstetric consultation would have been obtained. The next step of evaluation would have been detection of early pregnancy by vaginal ultrasound examination. That, however, is usually not possible before 6 weeks of gestation [4].

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