Clinical Policy Bulletin: Cholecystokinin Cholescintigraphy

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Policy

Aetna considers cholecystokinin (CCK) administration as an adjunct to cholescintigraphy medically necessary for any of the following indications:

1. After cholescintigraphy, to confirm or exclude chronic calculous cholecystitis; or
2. After cholescintigraphy, to confirm the diagnosis of chronic acalculous cholecystitis; or
3. After cholescintigraphy, to differentiate common duct obstruction from normal hypertonic sphincter of Oddi; or
4. After cholescintigraphy, to exclude acute acalculous cholecystitis; or
5. During cholescintigraphy, as a non-invasive method of diagnosing sphincter of Oddi dysfunction; or
6. Prior to cholescintigraphy, as an alternative to delayed imaging so cholescintigraphy can be completed in 60 minutes (rather than 3 to 4 hours); or
7. Prior to cholescintigraphy, to empty the gallbladder in members fasting more than 24 hours.

Aetna considers cholecystokinin cholescintigraphy experimental and investigational for all other indications (e.g., provocation of pain as a predictor of post-operative relief of symptoms following cholecystectomy for biliary dyskinesia or chronic acalculous gallbladder disease) because its effectiveness for indications other than the ones listed above has not been established.

Background

This policy is based primarily on a review of indications for cholecystokinin cholescintigraphy by Ziessman (2001).
Cholecystokinin Cholescintigraphy (also known as a hepatobiliary imino-diacetic acid [HIDA] scan or gallbladder scan) is a nuclear medicine test used to diagnose obstruction of the bile ducts (e.g., by a gallstone or a tumor), gallbladder disease, and bile leaks.

Cholecystokinin (CCK) is a useful diagnostic adjunct to cholescintigraphy. Recent studies in the medical literature have shown that cholecystokinin cholescintigraphy is clinically reliable in predicting which patients with acalculous cholecystitis or biliary dyskinesia will improve symptomatically following cholecystectomy. Sincalide is the only commercially available form of CCK approved by the U.S. Food and Drug Administration.

It may be necessary to administer CCK prior to cholescintigraphy in fasting patients to empty the gallbladder. In this case, CCK is administered to reduce the chance of a false-positive study (i.e., gallbladder non-visualization in a patient who does not have acute cholecystitis).

Cholecystokinin may also be administered prior to cholescintigraphy, as an alternative to delayed imaging so cholescintigraphy can be completed in 60 minutes (rather than 3 to 4 hours). This may be important in seriously ill patients who may not be able to complete a delayed imaging study of 3 to 4 hours duration. Patients who would have had delayed visualization usually have gallbladder visualization at 60 minutes if pre-treated with CCK.

Cholecystokinin may be used during cholescintigraphy as a non-invasive method of diagnosing sphincter of Oddi dysfunction (i.e., a partial common duct dysfunction at the level of the sphincter of Oddi that is not caused by an obstructing stone or inflammatory fibrosis). Administration of CCK allows non-invasive physiologic assessment of duct drainage.

Cholecystokinin may be administered after cholescintigraphy to exclude acute acalculous cholecystitis. If the gallbladder contracts in response to CCK infusion, acute cholecystitis has been ruled out. This response is especially useful where acute acalculous cholecystitis is strongly suspected in a patient with gallbladder filling (potentially false-negative study).

It may be necessary to administer CCK after cholescintigraphy to differentiate common duct obstruction from normal hypertonic sphincter of Oddi. Gallbladder contraction in response to CCK occurs in patients with normal hypertonic sphincter of Oddi.

Cholecystokinin has also been used after cholescintigraphy to confirm or exclude chronic calculous cholecystitis. Cholecystokinin cholescintigraphy can help confirm or exclude chronic cholecystitis in patients with recurrent abdominal pain and cholelithiasis on ultrasonography. A normal gallbladder ejection fraction makes it very unlikely that chronic cholecystitis is the cause of a patient's symptoms. Alternatively, a low gallbladder ejection fraction is consistent with chronic cholecystitis.

Cholecystokinin may also be administered after cholescintigraphy to confirm the diagnosis of chronic acalculous cholecystitis. Patients with low gallbladder ejection fractions (less than 40%) determined by cholecystokinin
Cholecystokinin Cholecintigraphy have a high positive predictive value for the diagnosis of chronic acalculous cholecystitis.

Dibaise (2009) stated that the diagnosis and management of suspected functional biliary pain in patients with an intact gallbladder remains contentious. Major issues include the lack of a clear definition of what constitutes biliary pain, a poor understanding of its natural history and pathophysiology, and the all too common scenario of the patient who has persistent pain despite surgical removal of the gallbladder. As a consequence, symptoms alone have generally been considered to be unreliable in the diagnosis of gallbladder dysfunction, and this has led to a search for a reliable test to help confirm a clinical suspicion of gallbladder dysfunction prior to the definitive treatment, cholecystectomy. At present, CCK with a calculation of the gallbladder ejection fraction is the most commonly used test; however, its utility in predicting symptom outcome after cholecystectomy has been questioned. The use of CCK to determine the appropriateness for cholecystectomy appears to be most useful when performed using a slow infusion of cholecystokinin in a well-selected patient population.

Edwards et al (2014) noted that chronic acalculous gallbladder disease (CAGD) falls within the spectrum of diseases associated with gallbladder dysmotility. Cholecystokinin-cholecintigraphy (CKK-CS) has been used to evaluate for CAGD, with a gallbladder ejection fraction (GBEF) of less than 35 % being indicative of gallbladder dysfunction. The reproduction of biliary colic upon administration of CCK has been cited as indicative of CAGD. These researchers examined if low GBEF or reproduction of pain during CKK-CS was predictor of surgical outcomes related to resolution of symptoms or as a correlate to gallbladder pathology. A retrospective review of patients was performed to evaluate adults with a diagnosis of CAGD who underwent CKK-CS prior to surgical intervention. CPT and ICD-9 coding queries were used to identify the patient population. Patients with cholelithiasis were excluded. A total of 64 patients met inclusion criteria; 2 patients were lost to follow-up and were excluded. During CKK-CS, 41 patients (66 %) reported symptoms similar to their presenting complaint; 21 patients reported no symptoms with CKK-CS. There was no significant relationship between gallbladder pathology and either GBEF or reproduction of symptoms with CKK-CS (p = 0.14). About 81 % of patients (n = 50) had relief of symptoms following cholecystectomy; 66 % of patients (n = 33) with long-term symptom relief after cholecystectomy had reproduction of symptoms with CKK-CS; 19 % of all patients (n = 12) had long-term symptom recurrence despite surgery, 8 of these patients (66 %) had symptom reproduction with CKK-CS. There was no significant correlation with either the GBEF or symptoms reproduction with CKK-CS as a predictor of postoperative outcome (p = 0.12). The authors concluded that provocation of pain by CKK-CS and low GBEF are unreliable predictors of post-operative relief of symptoms following cholecystectomy for biliary dyskinesia or chronic acalculous gallbladder disease.

CPT Codes / HCPCS Codes / ICD-9 Codes

CPT codes covered if selection criteria are met:
Hepatobiliary system imaging, including gallbladder when present
with pharmacologic intervention, including quantitative measurement(s) when performed

**HCPCS codes covered if selection criteria are met:**

- **J2805** Injection, sinalde, 5mcg

**ICD-9 codes covered if selection criteria are met:**

- **574.00** Cholelithiasis, acute, chronic, and other cholecystitis, and
- **575.21** Obstruction of gallbladder
- **576.2** Obstruction of bile duct [common]
- **576.5** Spasm of sphincter of Oddi

**Other ICD-9 codes related to the CPB:**

- **575.8** Other specified disorders of gallbladder

**The above policy is based on the following references:**

24. Edwards MA, Mullenbach B, Chamberlain SM. Pain provocation and low gallbladder ejection fraction with CCK cholecintigraphy are not predictive...