Body packers: radiological challenge to new packaging techniques

Poster No.: C-1347
Congress: ECR 2012
Type: Educational Exhibit
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Keywords: Conventional radiography, CT, Forensic / Necropsy studies, Emergency, Diagnostic procedure, Foreign bodies
DOI: 10.1594/ecr2012/C-1347

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Learning objectives

- To describe the radiological findings that may be observed when imaging body packers.
- To identify the radiological signs of ingested drug packets and to familiarize with the new packaging techniques.
Background

Body packing is defined as the trafficking of illicit drugs within the gastrointestinal tract (GI tract).

Daily, illegal drugs are imported through major ports of entry in many countries.

In recent years, we have observed in the emergency room an increasing number of cases in which there is suspicion of body packers, probably due to an increase in international traffic of drugs and/or intensification of security measures at airports.

The body packer is a person who carries intra-abdominal foreign bodies such as latex sheath (condom or balloon), rubber glove fingers or cellophane filled with tightly packed illicit drugs (cocaine, heroin, cannabis, amphetamines, or other substances), for purposes of smuggling. Cocaine, because of its popularity among drug users and its potential for high profit to the smuggler, has become a major item in the list of drugs brought into many countries illegally.

The body packer can carry as many as 200 packets by swallowing three separate loadings four hours apart to fill the entire GI tract, just before takeoff. Parasympathomimetic drugs may be used to inhibit peristalsis and delay defecation during the flight. The patient, once reached its destination, will use oral laxatives or enemas to expel the ingested packages.

Clinically body packers can be broadly classified into three groups:

a) Asymptomatic;

b) Body Packer intestinal occlusion syndrome;

c) Body Packer syndrome secondary to cocaine intoxication;

The "Body Packer syndrome" itself is defined as an intestinal obstruction and/or secondary intoxication due to transport of drug packages in the GI tract.

It is imperative for radiologists to understand and familiarize themselves with the radiological signs of ingested drug packets. Radiologists must also be aware of their legal responsibilities when interpreting examinations of suspected smugglers. Radiological measures may also be required also when suspected smugglers present with foreign-
body induced intestinal obstruction or drug toxicity due to the rupture or leakage of drug packets.

At present, drug packets are machine produced and therefore uniform in size and weight. Improvements in packaging and increasing sophistication of traffickers add to detection difficulty. The new type of packaging is a special challenge to customs, they are not always visible (radio-opaque) on abdominal radiographs.
Plain abdominal X-ray film is the most common radiological method for investigating suspected body packers. It is an easy, quick and widely available test, with varying but high accuracy for the detection of drug-filled packets.

On a plain abdominal radiograph the packets are usually detected as multiple, well defined homogenous spherical or cylindrical, radiodense packets, but one of the most important signs is a thin, lucent rim of air with a spherical or cylindrical pattern. This finding is most often caused by air trapped between the wrapping and the illicit drug. This radiological finding can also be created by a rim of air found between layers of latex when body packers use double-wrapped condoms, this is called the "double condom sign". (Figs. 1,2,3,4)

However as stool may also appear somewhat spherical as well, the radiological differences between ingested drug packets and surrounding stool may be subtle. The high density of packet content and the dense contour of the packet's synthetic material helps distinguish the ingested substance from normal bowel content.

The smugglers can use evasive tactics, usually unsuccessful, attempt to degrade the image or distract the radiologist, in the belief that metallic embellishments in clothing, internal metallic objects, or other radiodense contrast material will alter the detection of foreign bodies by distorting or masking them. Movements during the performance of the test are some techniques used to distort the image, but the technologist must ensure the quality of examination before it is reported.

There are few reports on the use of ultrasound which is non-ionizing and has low recurring cost. Ultrasound studies show that drug packets in the stomach are easily detected when they are surrounded by fluid.

The use of CT scan of the abdomen will increase due to the use of non-radio-opaque package materials such as condoms filled with liquid cocaine. (Figs. 5,6,7,8,9)

Another reason for a more frequent use of CT scans is the conclusion of some studies who found a higher sensitivity and specificity of a CT scan compared to an abdominal X-ray of the abdomen for the diagnosis of bowel obstruction. The CT scan may be performed without oral contrast, and may show drug packages to be of slightly higher density than soft tissue, and trapped air in condoms becomes more conspicuous. (Figs. 10,11,12)
Fig. 1: Abdominal radiograph shows multiple, well defined homogenous spherical and cylindrical drug packets within the gastrointestinal tract.

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Fig. 4: Radiograph shows multiples drug packets in the gastrointestinal tract. Some drug packets in the descending colon arrange in stack-of-coins configuration (green arrows).

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Fig. 2: Radiograph shows multiple drug packets in the large bowel as spherical and cylindrical shaped radiodensities outlined by trapped air (green arrows).

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**Fig. 9:** Axial images of an abdominal CT scan without oral contrast, show high density material in the GI tract, in a patient who carries liquid cocaine.

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Fig. 10: Axial images of an abdominal CT scan without oral contrast, show high density material in the stomach and bowel (liquid cocaine). Also note the bowel obstruction.

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Fig. 7: Coronal CT images show cocaine packages within the gastrointestinal tract.

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Fig. 5: Axial CT images show cocaine packages with higher density than tissue, and trapped air is more conspicuous.

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**Fig. 8:** Three-dimensional CT image shows the drug packages.
Fig. 6: CT sagittal images show cocaine packages

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Fig. 12: Coronal image of an abdominal CT scan shows high density material in the bowel. Also note the bowel obstruction.
Fig. 11: Axial image of an abdominal CT scan shows high density material in the bowel. Also note the bowel obstruction.

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Conclusion

Drugs are being smuggled all over the world and the methods employed by the traffickers continue to increase in creativity, sophistication, and ingenuity.

The radiologist must recognize all signs of ingested drug packets and be aware of their legal responsibilities when interpreting examinations of suspected smugglers.