

# Marks of violence

**M**urder leaves marks: no matter how cunning killers are, they cannot hide telltale traces of violence on the bodies of their victims. At an autopsy the pathologist follows the marks of death like symbols on a map to locate the cause, and confirm—or refute—suspicions of homicide.

## BRAIN HEMORRHAGE ►

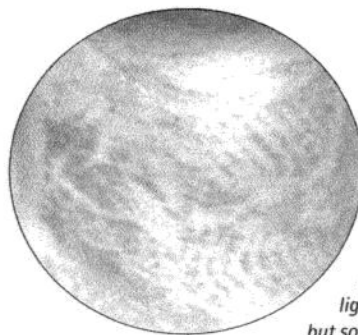
At an autopsy there may be no external signs that brain hemorrhage (bleeding) caused death, but an internal examination or, as here, a scan reveals the fatal clots.



Every method of killing leaves characteristic traces on the body, but not all marks are equally distinct and obvious. Some poisons and drugs, for instance, leave no clearly visible marks, and can only be detected by analysis. At the other extreme, signs of a violent death are immediately apparent from an external examination. These injuries are usually divided into blunt-force trauma, gunshot, and sharp-force trauma. Attacks that leave such obvious signs on the body make up by far the majority of murder cases: instances where the cause of death leaves no obvious sign are much rarer in reality than they are in detective novels. Some of the most common signs of death are explained below. There are fuller accounts in Chapter Six: Lethal Agents.

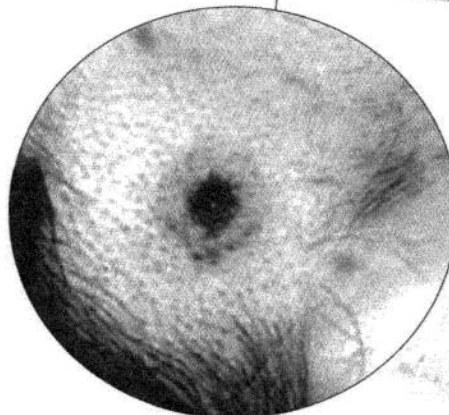
## Color changes

Some fatal agents cause alterations to the appearance of the body, such as a color change—though not in the very dark-skinned. Carbon monoxide poisoning, for example, causes a characteristic “cherry pink” color change in the skin. And the pinhead-size patches of bleeding in the face caused by smothering or crushing of the chest can be so extensive as to make the whole face blue. Other color changes not directly linked to the cause of death are nevertheless relevant to an investigation.



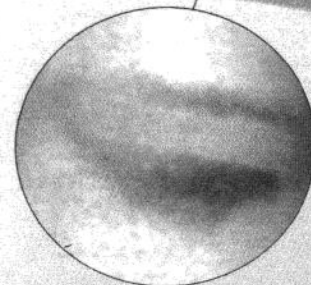
## ◀ STRANGULATION

Both ligatures (cords, ropes, and similar weapons) and hands can produce distinct bruise patterns on the neck. Most ligatures leave obvious lines, but soft fabrics such as scarves may scarcely bruise the skin. When the skin is not marked, dissection shows clear signs of bruising in the tissue beneath.



## GUNSHOT ▲

Details of gunshot wounds provide information about the circumstances of death: they can rule out suicide—but cannot prove it; their size is a guide to the caliber of the weapon; and burn marks on the skin show the victim was shot at close range.



## BRUISING ▲

Often called contusions, bruises are small blood vessels broken by blunt-force trauma. Their shape can show the direction of impact, and color indicates how long ago the injury happened. As bruises heal, they change from red or purple through brown, green, and yellow. Interpreting bruises is not straightforward; people bruise at different speeds, and bruising continues after death.

## Scorch marks

Extensive burns to the body can themselves cause death, but even tiny scorch marks are significant when there are no other obvious signs on the skin because they may suggest electrocution. Lethal electric current can, in some cases, cause

blistering at the point of contact, though where contact is extensive—as it is when the victim was in the bathtub—the skin is often unmarked. A lightning strike may leave no external marks on the body, but the intense electrical current can heat metal objects in clothing, such as clasps and zippers, and these can burn the skin.

## Internal injuries

It is rare for fatal internal injuries to leave no external marks: more often, dissection confirms what a pathologist suspects from the first inspection of the body. This is hardly surprising: a blow that is strong enough to cause fatal damage to internal organs usually leaves bruises on the skin.

One exception to this general rule is brain damage. A blow to the head, or violent shaking of a baby's head, may leave no bruise or graze but can nevertheless be sufficient to cause death by bleeding within the skull.

### ◀ KNIFE WOUNDS

The shape of cuts in flesh can reveal whether the weapon had one cutting edge or two. The angle of entry may indicate direction to rule out accidental death, and depth suggests the amount of force used—important evidence of intent to kill.

### ◀ SHOTGUN

Fired at close range, shotguns make a single large wound. At a greater range, pellets make individual wounds, as shown here. Investigators often ask pathologists to use wound distribution to estimate the distance between the killer and victim, but many factors, such as the type of weapon, the batch of ammunition, or even the temperature, make such estimates unreliable.

### ▲ LACERATIONS

Close inspection of a laceration can reveal further details of the weapon used. In the case of knives, information on the width of the blade is often unreliable because the weapon may have been moved after the initial cut.

## Histology

The least conspicuous signs may appear only when the body's organs are examined at high magnification—the discipline of histology. A precision device called a *microtome* is used to pare off a transparently thin slice of tissue, which is mounted on a microscope slide. The slide is then chemically stained to enhance any tissue abnormalities. If any aberrations are found, further chemical stains may be carried out in order to indicate specific damage or disease.

### ◀ STRUGGLE WITH A KNIFE

If a victim of a stabbing has cut hands, the pathologist carrying out the autopsy could conclude that there had been a struggle for the knife—which would suggest that the killer might also be wounded.

