Orbital Varices: A New Technique for Noninvasive Diagnosis

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Orbital venous varices can be a perplexing imaging problem, as they typically are expanded only during periods of venous hypertension, which is transmitted cephalad owing to the lack of valves in the internal jugular veins [1]. When venous pressure is not elevated, orbital varices may collapse and be undetectable on routine imaging studies, such as axial CT scans of the orbit. A provocative test frequently is necessary to demonstrate these lesions, and should be performed in patients with intermittent proptosis and diplopia, such as when coughing, straining, or leaning forward.

Improved visualization of orbital varices on CT scans obtained during the Valsalva maneuver and in coronal (as compared with axial) scans has been described [1, 2], and methods of diagnosis that make use of manual compression of the neck have been described in the Chinese literature [3]. We describe a new technique for evaluating patients with symptoms suggestive of orbital varices that is noninvasive and does not require IV contrast administration. We believe this technique will produce more reliable and consistent results than studies that use the Valsalva maneuver and manual neck compression. Our technique is also useful for patients who are unable to assume the position for direct coronal CT scanning.

Materials and Methods

We evaluated four patients with either clinical evidence suggesting orbital varices (50%) or suspected orbital varices on other studies (50%).

Initially, contiguous axial 3-mm slices were obtained through the orbits on a GE 9800 CT scanner (GE Medical Systems, Milwaukee) without IV contrast medium. An elastic tourniquet was then placed around the patient’s neck (Fig. 1) sufficiently tight to just produce dilatation of the external jugular veins without producing discomfort, complete occlusion of the internal jugular veins, or arterial or respiratory compromise. The tension in the tourniquet was similar to a moderately tight shirt collar. At this degree of tension the radiologist’s finger could readily be placed between the tourniquet and the patient’s skin. The tourniquet was applied by the radiologist, who closely monitored the patient throughout the procedure. The axial CT scan was then repeated, and a positive test was indicated by the appearance of, or by a marked increase in the size of, a retrobulbar mass lesion.

Results

Images confirming the diagnosis of orbital varix were obtained in all four patients. The precompression axial scans were either normal (50% of patients) or showed minimal orbital apical opacity (Fig. 2A). The typical appearance of orbital

![Image](https://example.com/image.png)
salva
as a
spare,
reflecting
the
difficulty
in
diagnosis
this
entity.

Previous
techniques,
such
as
widespread
lymphangioma.

include
vascular
Orbital
afferent
efferent
expanded
view
of
genital
nous
varicosities
are
present).
The
dilated
and
neck
without
complications.

for
other
compression.

three
additional
patients
have
been
studied
with
this
technique
(V).

A
was
found
to
have
collapsed
varices
after
compression
is
shown
in
Figure
2B.
One
patient
was
found
to
have
bilateral
orbital
varices
(Fig. 3) after
initial
CT
and
MR
examinations
to
evaluate
a
possible
cerebello-
pontine
angle
tumor
revealed
a
inghtal
mass.

No
complications
occurred
in
our
patient
series.
Moreover,
three
additional
patients
have
been
studied
with
this
technique
for
other
possible
venous
disorders
of
the
extracranial
head
and
neck
without
complications.

Discussion

Orbital
varices
can
be
simple
(consisting
of
a
single
tubular
dilated
venous
structure)
or
complex
(as
when
multiple
venous
varicosities
are
present).
The
lesions
are
usually
con-
genital
venous
vascular
malformations,
in
which
both
the
afferent
and
effferent
vessels
are
veins.
More
recently,
an
expanded
view
of
orbital
varices
has
been
suggested
[4]
to
include
vascular
hamartomas
that
have
a
variceal
component.

Orbital
varices
have
also
been
reported
as
an
element
of
more
widespread
vascular
malformations
and
in
cases
of
orbital
lymphangiomA.
In
addition,
venous
varicosities
can
be
seen
as
a
result
of
prominent
venous
drainage
from
an
orbital
or
intracranial
arteriovenous
malformation
[5–7].

References

in
the
radiologic
literature
to
orbital
varices
are
sparse,
reflecting
the
difficulty
in
diagnosing
this
entity.
Previous
techniques,
such
as
manual
neck
compression
or
Val-
salva
maneuver,
are
highly
dependent
on
patient
cooperation
and
thus
difficult
to
reproduce.
We
believe
our
technique
is
safe
and
able
to
produce
more
reliable
and
consistent
venous
hypertension
than
that
obtained
from
previously
used
methods.
This
technique
is
also
applicable
to
MR
investigation
of
orbital
vascular
disease.

Particular
care
should
be
exercised
when
using
this
technique
with
elderly
patients,
and
its
use
in
children
who
are
unable
to
verbalize
discomfort
is
not
suggested.
The
tourni-
quet
should
be
released
immediately
if
there
is
any
evidence
of
patient
discomfort
or
distress.

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17,
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